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Clinical Trial of the Penn Test for Cancer

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• **An independent clinical trial of the Penn seroflocculation test for cancer was carried out in order to learn whether this test might be clinically useful either in differential diagnosis or as a screening test for the detection of cancer. In addition, studies were made of the flocculation titer of sera giving positive Penn tests. Incidental observations were made concerning the reproducibility of the test.**

The trial provided no evidence that the test might be useful in cancer detection.

The test should be improved technologically before further clinical evaluations are undertaken.

Further study of the basic mechanisms that bring about the positive Penn reaction appears desirable.

IT HAS BEEN REPORTED[3] that the Penn seroflocculation test for cancer gives positive results in a high percentage of patients with malignant tumors and only rarely gives positive results in patients without disease or pregnancy. An independent trial was carried out to evaluate the clinical usefulness of this test.

Clinical material was obtained from the wards and outpatient clinics of the Los Angeles County General Hospital, including the dermatology and tumor clinics. Supposedly normal sera were obtained from blood bank donors, medical students and hospital employees (25 per cent were over 40 years of age and none were over 55). The same questionnaire as was used by the Penn group was completed on each individual. Among the normal group this questionnaire was filled out by the individual, while among the patients the questionnaire was completed by one of the authors. For purposes of analysis of data the patients were categorized as normal, nontumor, benign tumor, malignant tumor, and unknown.

A total of 1309 sera were studied, of which 175 were termed "unknown" or "undiagnosed" for lack of adequate information concerning the patient. (Most of these persons were patients who did not return to the clinic, who died without autopsy, or who for any reason were lost to the study before a definite diagnosis could be established.) The remaining 1134 sera were drawn from 1113 persons, the 21 additional sera being drawn from 17 patients as noted in a later part of this report. The diagnosis of malignant disease in 282 patients and of benign tumor in 137 patients was confirmed in each case by histological examination.

All sera were collected and processed according to the procedures specified by Penn and his associates.[3,5] To assure conformity with their techniques a technician employed by the Los Angeles County Hospital Attending Staff Association spent three weeks at Sawtelle Veterans Hospital familiarizing himself with the methods and mechanics of the test. The "antigen" used was a derivative of choladienic

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ester (ethyl choladienate) supplied by Lederle Laboratories.

The Penn test consists of using two tubes containing different amounts of undiluted serum with a fixed amount of "antigen." The test is called positive if either or both of these tubes contains large floccules and a crystal clear solution, and a tube is called negative if there are no particles and the solution is cloudy to hazy. Tubes in which the results were doubtful were consistently recorded in this study as negative.

Most of the sera which gave a positive Penn test were subjected in addition to a determination of titer at the suggestion of Penn and his associates, who had found[4] that "false" positives in normal sera were usually positive only in a low dilution, while sera from patients with cancer usually had a higher titer. A titer of 1:12 was considered by the Penn group to be definitively positive. Accordingly, in reporting the results in the series, the standard, two-tube Penn test is designated the "presumptive" test. The new and additional titration test was called "definitively positive" in sera showing a titer of 1:12 or more.

RESULTS

Table 1 shows the overall results in the 1134 sera from patients with established diagnosis and in the 175 sera drawn from patients without established diagnosis. The presumptive test (i.e., the conventional Penn test) was positive in 9 per cent and the definitive test (titer 1:12 or higher) was positive in 2 per cent of the supposedly normal persons. Corresponding data on persons with miscellaneous disease conditions were, respectively, 62 and 41 per cent; for pregnant women, 72 and 44 per cent; for persons with benign tumors, 30 and 12 per cent; for dermatologic malignant disease, 48 and 30 per cent; and for malignant tumors of all other organs, 80 and 49 per cent. (While positive reactions in the presence of cancer of the skin were considerably fewer than with malignant disease of other organs, the results among these other categories of malignant growth were essentially homogeneous.) Sera from patients with malignant tumors of any kind gave a presumptive positive result in 75 per cent and a definitive positive result in 46 per cent, while in individuals with neoplasia of any kind the results were, respectively, 61 per cent and 35 per cent.

In the 175 sera drawn from patients on whom information was inadequate for diagnosis, 78 per cent were positive in the presumptive test and 44 per cent were positive in the definitive titration test. In patients with proven malignant disease the positive results were 75 per cent and 46 per cent, while in those with miscellaneous nonneoplastic diseases they were 61 and 47 per cent respectively.

TABLE 1.—*Overall results, showing number of sera tested, and the number and percentage positive on conventional Penn test and the number and percentage definitively positive with a titer of 1:12, according to classification of the individual*

Classification of Patient	Total No. of Sera	Penn Test Positive		Titration Test Positive 1:12	
		No.	Per Cent	No.	Per Cent
"Normal" persons	560	50	8.9	10	1.8
Benign tumors	139	41	29.5	17	12.2
Malignant tumors	294	221	75.2	136	46.3
Pregnancy	54	39	72.2	22	40.7
Miscellaneous diseases	87	53	60.9	41	47.1
Diagnosis not established	175	137	78.3	77	43.8

TABLE 2.—*Reaction to Penn test and to titration in sera of persons with miscellaneous nonneoplastic diseases.*

Disease	Total No. of Sera	Penn Test Positive		Titration Test Positive 1:12	
		No.	Per Cent	No.	Per Cent
Diabetes	19	12	63	8	42
Peptic ulcer	10	9	90	7	70
Gallbladder disease	6	5	83	5	83
Pelvic inflammatory disease	5	3	60	3	60
Breast abscess	4	2	50	1	25
Chronic cervicitis	4	2	50	1	25
Acute appendicitis	4	4	100	4	100
Inguinal hernia	3	3	100	2	67
All other conditions*	32	13	41	10	31
Total	87	53	61	41	47

*Includes one or two cases each of tuberculosis, rheumatoid arthritis, infectious mononucleosis, gangrene, subacute bacterial endocarditis, tonsillitis, uremia, pyelonephritis, burns, fracture, arteriosclerotic heart disease, varicose veins (one or more positives being found in each of these conditions); myocardial infarction, hypertensive heart disease, bronchiectasis, cystitis, tracheitis, anemia, osteoarthritis, epidermatophytosis, gingivitis, gastroenteritis, and stab wound in the chest.

Data on the 87 sera drawn from patients with miscellaneous non-neoplastic diseases are broken down according to kind of disease in Table 2. The Penn test was positive in a majority of patients who had diabetes, peptic ulcer, gallbladder disease, pelvic inflammatory disease, breast abscess, chronic cervicitis, acute appendicitis, inguinal hernia, tuberculosis, rheumatoid arthritis, infectious mononucleosis, gangrene, subacute bacterial endocarditis, tonsillitis, uremia, pyelonephritis, burns, fractures, arteriosclerotic heart disease, or varicose veins.

Two or more tests were made at various time intervals on 17 of the patients. The results available on these multiple tests of the same person are shown in Table 3. In ten of these persons the results of the tests that were done at different times were not identical. In 16 of these sera the result of the presumptive test was negative and it is unfortunate that the definitive test (serum titration) was done in only four of them. In these four Penn-negative sera, however, the definitive test was positive in two and negative in two. (All four of these patients had malignant tumors).

Since the purpose of this investigation was to make an independent clinical trial of the Penn test, its objectives did not include any direct experimental

TABLE 3.—Results of consecutive tests of the same person in 17 cases.

Diagnosis	Date	Penn Test	Titration Test 1:12 Dilution
Normal	3/16	+	+
	4/7	+	+
Malignant disease	3/16	+	+
	4/26	+	+
Malignant disease	4/12	+	+
	10/20	+	+
Malignant disease	3/9	+	+
	5/17	+	—
Benign tumor	8/18	+	—
	8/30	+	+
Normal	3/17	+	—
	4/5	+	—
Malignant disease	3/9	—	+
	3/17	+	+
	3/22	+	+
Normal	4/15	—	
	5/29	+	—
	6/8	+	—
	6/15	+	—
	6/23	—	
Malignant disease	2/23	+	—
	3/9	—	
Malignant disease	3/15	—	
	4/12	+	—
Malignant disease	5/3	+	—
	6/14	—	
Malignant disease	9/20	—	
	11/17	+	—
Benign tumor	11/1	+	+
	11/17	—	
Malignant disease	3/24	—	+
	3/30	—	—
Malignant disease	4/12	—	
	8/30	—	—
Normal	4/15	—	
	9/7	—	
Malignant disease	3/24	—	
	3/30	—	

effort to measure the technical validity of the test or to attempt to develop any technological improvements. Nonetheless, during the course of the study the authors were asked to test an improved antigen prepared by the Penn group (antigen"3") in parallel with the antigen which had been received from the Lederle Laboratories for this study (antigen "1"). This seemed like a good opportunity to try also a second antigen (antigen "2") obtained from the Lederle Laboratories and presumed to be identical with antigen "1." Sera of 100 patients which had been tested with antigen "1" were subsequently tested with antigens "2" and "3." The time between the test with "1" and the tests with "2" and "3" ranged from one day to 40 days, but there did not appear to be any correlation between this interval and the results. The results obtained with the three antigens in tubes 1 and 2 of the presumptive test are shown in Table 4 with the number of sera exhibiting each kind of result. It is noted from this table that the results were identical with the three antigens in

TABLE 4.—Results of the two-tube conventional Penn test on 100 sera using three antigens.

Antigen "1" Tube		Antigen "2" Tube		Antigen "3" Tube		Number of Sera
1	2	1	2	1	2	
+	+	+	+	+	+	59
—	—	—	—	—	—	21
—	+	+	+	+	+	5
+	+	+	+	+	—	2
+	—	—	—	—	—	1
—	—	—	—	+	—	1
+	+	—	—	+	+	5
—	—	+	+	+	+	1
+	+	—	—	—	—	1
—	—	—	—	+	+	3
—	—	+	+	+	—	1

80 sera, and almost identical in nine more. In the remaining 11 sera, however, there was pronounced disagreement between antigens and none of the three antigens appeared consistently more or less sensitive than the others.

In 13 of these same sera the test with one or more of the three antigens was made more than once, and in nine of these sera the titration test was also performed with antigen "1." The results are shown in Table 5. In the case of these 13 sera the presumptive test with antigen "1" was repeated at the time antigens "2" and "3" were used. There was no instance among the 13 in which the results with the three antigens were perfectly consistent. It is notable that presumptive tests with antigens "2" and "3" gave doubtful or negative results in the two sera which were definitively positive in a dilution of 1:12 when tested against antigen "1." On the other hand, both antigens "2" and "3" gave consistently positive results with one serum (No. 1189) that was only questionably positive in the presumptive test with antigen "1" and definitely negative in the titration test with antigen "1."

While it had been hoped that these tests could be run without laboratory knowledge of the diagnosis of the patient, it became a practical necessity for the technician doing the tests to draw the majority of the blood specimens from patients on the wards or in the clinics. The majority of sera from normal persons were also readily identified by the fact that they were sent to the laboratory in racks from the blood bank. In view of the technological discrepancies noted in the foregoing data, the authors examined the results with sera from normal patients according to whether these sera were the only ones tested that day in this clinical series, or whether they were tested along with other categories of sera. A similar study was made of sera from patients with malignant tumors. The findings are shown in Table 6. It was noted that "false positives" in normal sera were obtained only half as often when these sera were run alone, and that "false negatives" with

malignant sera were also obtained half as often when these were run alone. The reductions in incidence of positive presumptive tests in normal sera and of negative definitive tests in malignant sera when these were run alone are statistically significant: (p=.02 and p=less than .01, respectively).

As has already been noted, in the conventional Penn test two tubes in which antigen is combined with serum are used and the result is called positive if the reaction in either or both of these tubes is positive. The determination of titer constituted information over and above that provided by the conventional test as reported in the literature, and the data of the present study have therefore been subjected to additional study as to the results of titration and the agreement between titration and the two tubes of the conventional test.

With respect to consistency of the titration of any given serum, it was noted that 82 of the titrated sera were positive at 1:30. Eleven of these (or 13 per cent) were negative at 1:20 and five of the 11 were also negative at 1:16. Of the 11 sera which were negative at 1:20 and positive at 1:30, six were also positive at 1:40 and one of them was positive also at 1:60 and 1:80. These were the only discrepancies noted except for the fact that undiluted serum quite frequently gave a negative result when positive in dilutions of 1:6 or more.

The relationship between disease status and titer in sera which gave a positive Penn test is shown in Table 7. When the Penn test was positive in normal sera it remained positive in more than half of the sera when diluted 1:6, but none of the normal sera gave positive reaction at titers higher than 1:20. About 80 per cent of sera from patients with benign tumors that were Penn-positive remained positive through the dilution 1:8, but none of them were positive in a dilution higher than 1:20. Penn-positive

TABLE 5.—*Repeated presumptive tests on the same sera using three antigens.*

Serum No.	Antigen "1" Tube 1	Antigen "1" Tube 2	Antigen "2" Tube 1	Antigen "2" Tube 2	Antigen "3" Tube 1	Antigen "3" Tube 2	Serum Titer Against "1"
1186	+	—					
	—	—	—	—	—	—	
	—	—	—	—	—	—	
1189	—	—					
	—	+	+	+	+	+	
	—	+	+	+	+	+	Negative 1:6
1203	—	—					
	+	—	+	+	+	+	
	+	+	—	—	+	—	
1224	—	—					
	+	+	+	+	+	+	
	+	+	—	—	+	+	
1199	+	+					
	+	—	—	—	—	—	Positive 1:6
	+	—	—	—	+	+	
1198	+	+					
	+	+	—	—	—	—	
	+	+	—	—	+	+	Positive 1:8
1223	—	—					
	+	+	+	+	+	+	
	+	+	—	—	+	+	
1183	+	+					
	+	+	—	—	—	—	
	+	+	—	—	+	+	Positive 1:12
1184	+	+					
	+	+	—	—	—	—	
	+	+	—	—	—	—	
1173	—	—					
	—	—					
	+	+	—	—	—	—	
1206	—	—					
	+	+	—	—	+	+	
	+	+	—	—	+	+	(Titration not done)
1220	—	—					
	—	—	+	—	+	—	
	+	+	—	—	+	—	
1222	—	—					
	—	—	+	—	+	—	
	+	+	—	—	—	—	

TABLE 6.—*Results with "normal" and malignant sera depending upon whether or not the sera were run along with other kinds of sera in this series on the same day.*

Sera from Normal Persons	Number of Sera	"False Positive" Test: Penn Test No.	Penn Test Per Cent	Titer 1:12 No.	Titer 1:12 Per Cent
Run alone	260	15	6	2	1
Run with other sera	300	35	12	8	3

Sera from Persons with Malignant Disease	Number of Sera	"False Negative" Test: Penn Test No.	Penn Test Per Cent	Titer 1:12 No.	Titer 1:12 Per Cent
Run alone	43	6	14	12	28
Run with other sera	251	67	27	146	58

TABLE 7.—*Results of titration of Penn-positive sera.*

	Number of Sera	Per Cent of Sera Positive in Dilution of: 1:6	1:8	1:12	1:16	1:20	1:30	1:40	1:50	1:60	1:80	1:100	1:120
Normal	50	54	34	20	16	4	0	0	0	0	0	0	0
Benign tumor	41	80	78	41	2	2	0	0	0	0	0	0	0
Malignant disease	214	93	84	63	36	31	18	14	7	4	3	1	1
Dermatologic	21	86	76	62	24	24	10	10	5	5	5	0	0
All other	193	94	85	63	37	32	19	14	7	4	3	2	2
Miscellaneous	92	95	89	68	32	27	21	13	4	2	0	0	0
Not diagnosed	134	85	79	57	34	29	14	9	3	3	1	0	0

TABLE 8.—*Results in the titration of sera in relation to results in the two tubes of the Penn test. Patients are grouped as "normal," "benign tumor," and "all others" (which includes malignant disease, pregnancy, miscellaneous nonneoplastic diseases, and no diagnosis).*

Penn Test Tube 1	Penn Test Tube 2	Category	Number of Sera	Per Cent of Sera Positive in Dilution of: 1:6	1:8	1:12	1:16	1:20	1:30	1:40	1:50	1:60	1:80	1:100	1:120
+	+	Normal	28	79	54	32	7	0	0	0	0	0	0	0	0
		Benign	38	82	79	39	3	3	0	0	0	0	0	0	0
		Others	413	92	85	63	34	29	17	11	5	3	2	1	1
—	+	Normal	0	..	..	..	..	..	..	..	..	..	..	..	..
		Benign	0	..	..	..	..	..	..	..	..	..	..	..	..
		Others	14	86	86	71	71	71	71	64	7	7	0	0	0
+	—	Normal	22	23	9	5	0	0	0	0	0	0	0	0	0
		Benign	3	67	67	67	0	0	0	0	0	0	0	0	0
		Others	13	46	38	23	0	0	0	0	0	0	0	0	0
—	—	Normal	37	3	3	0	0	0	0	0	0	0	0	0	0
		Benign	17	6	0	0	0	0	0	0	0	0	0	0	0
		Others	33	21	15	6	3	3	3	3	3	3	3	0	0

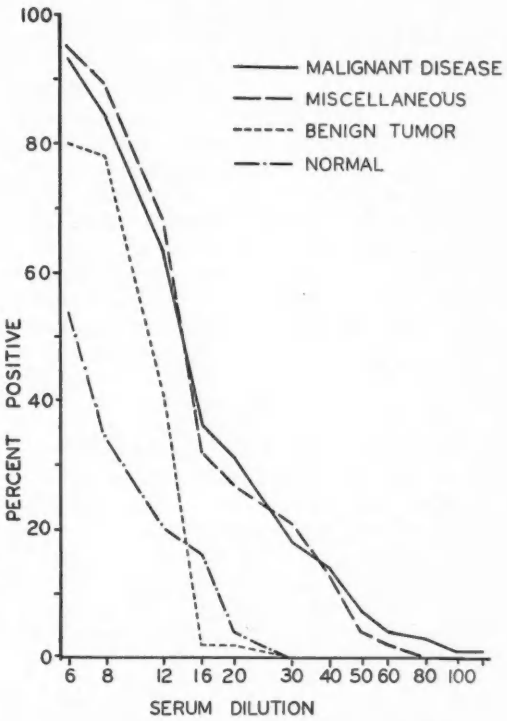

Chart 1.—Titration of sera that gave positive results in the conventional Penn test, shown according to whether the patient had malignant tumor, miscellaneous conditions (pregnancy or any of a large number of nonneoplastic diseases), benign tumor, or no known disease (normal).

sera from patients with malignant tumors, with pregnancy or miscellaneous nontumor diseases, and without established diagnosis all gave essentially similar results by titration test. The titration curves for these various categories of patients are shown in Chart 1.

It appears from Table 7 and Chart 1 that Penn-positive sera from normal individuals and patients with benign tumors tend to have lower titers than do Penn-positive sera from patients with malignant tumors, pregnancy, and a wide range of nonneoplastic diseases. It is also clear that the titer of the serum has little or no significance in distinguishing normal persons from those with benign tumors, nor in distinguishing malignant disease from a large variety of nonneoplastic conditions.

An analysis has also been made of the results of titration in sera of the different disease categories in relation to the results in tubes 1 and 2 of the Penn test (both positive, the first or the second negative, both negative). From the results previously cited, the sera were grouped in three categories: Normal, benign tumor, and all others (the latter including malignant disease, miscellaneous nonneoplastic diseases, pregnancy, and undiagnosed). The findings are shown in Table 8. Here again the essential similarity in the titration results with normal sera and benign tumor sera is apparent, as is the generally higher titer of patients with a wide variety of other clinical conditions. The two tubes of the Penn test, however, appear to be different in their ability to predict the results of titration, a positive reaction in the second tube being a good deal more reliable in this respect than a positive in the first tube. The relationship between the result in tube 2 (disregarding entirely the result in tube 1) and the results in the titration of sera from normal persons and patients with benign tumors and in patients with all other conditions included in this study, is shown in Table 9.

Finally, attention should be called, in Tables 8 and 9, to the frequency (10 per cent) with which Penn-negative sera were found positive in the titration test. Of all sera examined by titration, 91 per cent were positive in the 1:6 dilution when tubes 1 and 2 of the conventional test were both positive; 86 per cent when tube 1 was negative and tube 2 positive; 34 per cent when tube 1 was positive and

TABLE 9.—*Results of titration of sera that showed positive and negative results in the second tube of the Penn test, disregarding results in the first tube.*

	Penn Tube No. 2	Number of Sera	Per Cent of Sera Positive in Dilution of:											
			1:6	1:8	1:12	1:16	1:20	1:30	1:40	1:50	1:60	1:80	1:100	1:120
Normal and benign tumor	+	66	80	68	36	5	2	0	0	0	0	0	0	0
	—	79	11	6	4	0	0	0	0	0	0	0	0	0
Malignant disease, pregnancy, miscellaneous, and undiagnosed	+	427	92	88	63	35	30	19	13	5	4	2	1	1
	—	46	28	22	11	2	2	2	2	2	2	2	0	0

tube 2 negative; and 10 per cent when both tubes 1 and 2 were negative. One specimen which gave a negative Penn test result in both tubes was positive through the dilution 1:80 when subjected to titration.

DISCUSSION

With respect to the possible value of the Penn seroflocculation test in the differential diagnosis of overt cancer, the following clinical conditions gave an incidence of positive Penn tests approaching that found in patients with proven malignant disease: Pregnancy, diabetes, peptic ulcer, gallbladder disease, pelvic inflammatory disease, breast abscess, chronic cervicitis, acute appendicitis, inguinal hernia, tuberculosis, rheumatoid arthritis, infectious mononucleosis, gangrene, subacute bacterial endocarditis, tonsillitis, uremia, pyelonephritis, burns, fractures, arteriosclerotic heart disease, and varicose veins. Although this study by no means excludes the possibility that the Penn test may also be positive in numerous other conditions, this list alone is sufficiently heterogeneous to indicate the broad spectrum of conditions that may give a positive reaction. It appears to be a nonspecific[6] test for illness, but does not distinguish illness from pregnancy.

With respect to its possible use for the discovery of subclinical malignant disease, explicit evidence cannot be set forth on the basis of the present study, since this would require the careful observation of all persons in this study who were not already known to have cancer to see whether cancer developed later in most of those with positive Penn test results, and did not develop later in most of those with negative results. It is not inconceivable that 9 per cent of the "normal" persons in this series actually had unsuspected neoplasms, but this seems improbable since only about 25 per cent of the "normals" were over 40 years of age and none were over 55. It would seem a good deal more likely that the test does in fact give false positive reaction from time to time[3] and/or that the "normal" persons with positive reaction had pelvic inflammatory disease or varicose veins or tuberculosis or some other condition of which they were unaware.

Any suggestion that the Penn test might be useful in the detection of early cancer would appear to require an assumption that a test which gives positive reaction in advanced, clinically obvious malignant disease will also be positive when used in the case of a person who has a very early, asymptomatic and hidden cancer. There is no direct experimental evidence at present to justify this assumption and, to the authors at least, it seems a remote hope that a test which is positive in only 80 per cent of cases of readily diagnosable cancer would be positive in any substantial proportion of early and otherwise undetectable cancer. In addition, it must be noted that the lack of specificity of the test would tend to vitiate entirely the conclusion that an apparently normal person with a positive reaction to the test had a hidden cancer: He might as well have any of a very large number of quite unrelated disorders. A positive reaction to the test under these conditions could only be used as an argument to the patient to have a thorough check-up every six months.

With respect to the variability of the test itself, the data presented are incidental to the purpose of this study. It is apparent, however, that the test is difficult to control and that the results are not sufficiently reproducible.

CONCLUSIONS

1. An independent trial of the Penn seroflocculation test for cancer was carried out.
2. This trial provided no evidence that the test might be useful in cancer detection.
3. The technology of the test should be improved before further clinical evaluations are undertaken.
4. Further study of the basic mechanisms responsible for the positive Penn reaction appears desirable.

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Management of Upper Gastrointestinal Hemorrhage

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• **In the past few years gastric resection has become the therapy of choice for patients with massive hemorrhage from duodenal ulcer. When this is done as an emergency procedure the ability of the surgeon is often taxed to the limit. Although sometimes easy, control is often extraordinarily difficult. Many important technical details must be considered in order to attain a successful outcome. This method of therapy has proved to be very satisfactory with patients who are in good condition for operation, and even in the poorer risks seen on ward service has resulted in a surgical mortality of only 7 per cent in all patients less than 60 years of age treated for this extremely severe type of hemorrhage. In the older age groups mortality rates still remain high.**

CONTROL OF SERIOUS hemorrhage from the upper gastrointestinal tract theoretically should be secured by the surgeon just as active bleeding is treated in an external wound. Yet the operations necessary to do so are often so difficult that many physicians have preferred the variable results of conservative therapy rather than accept a high mortality from operation. Some surgeons, after experience with these difficult technical problems, also have decided it is safer to treat the acute phases of hemorrhage expectantly and to operate on the patient several weeks later if he survives.

This expectant attitude undoubtedly will result in the death of many patients, particularly those who are bleeding from erosions of the gastroduodenal artery or left gastric artery. It seems more logical therefore to assume that surgical control is the method of choice and that emphasis should be placed upon the technical means by which such operations can be made safer. Surgical therapy for many types of massive hemorrhage has been employed at the Massachusetts General Hospital for many years. From this experience many lessons have been learned. The following discussion is addressed particularly to clinical surgeons, and it deals particularly with the selection of patients for operation and proper operative techniques.

More particularly, it is concerned only with the major life-endangering hemorrhages that usually are described as massive or exsanguinating, since problems peculiar to the acute loss of blood are involved.

The definition of such a type of hemorrhage is necessarily somewhat elastic since objective criteria are difficult to set up. Stewart's statement that a massive hemorrhage is one in which the circulating red cell mass is reduced to 60 per cent or less of normal is as accurate as can be obtained today. However, unless an institution has been set up for special study, measurements of the blood volume are often difficult to obtain. A less accurate method, but one that provides an easy means of comparison, is to consider any patient who has had hemoglobin of 7 gm. or less per 100 cc. of blood at any time, or who has had five transfusions or more during the period of hospitalization, as one who has had a massive hemorrhage.

By these criteria, 516 patients with massive upper gastrointestinal hemorrhage have been observed in the Massachusetts General Hospital during the past five years. This figure again emphasizes the fact that massive hemorrhage is common. Many of the patients, however, are not candidates for surgical therapy, so that the surgical field is again restricted further.

A paper on this symposium by Dr. Cohn* has dealt with the emergency treatment of massive bleeding from esophageal varices, so that this group of cases need not be considered in detail. Suffice it to say that they now are a great challenge to surgeons. The death rate in Massachusetts General from these lesions remains very high. Operations for the control of such bleeding carry a high mortality rate (now is near 25 per cent) and, if the operation is survived, all too often liver failure results before a shunt can be performed.

Bleeding varices account for nearly one-third of all cases of massive upper gastrointestinal hemorrhage observed by the author; they will not be discussed. Other types of patients also must be excluded from any consideration of surgical therapy. Several systemic diseases are accompanied by such hemorrhage. For example, the terminal phase of nephritis often is manifested by upper gastrointestinal hemorrhage due to uremic ulcerations. Various forms of purpura or aplastic anemias may cause severe gastric hemorrhage. Consequently, a physi-

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cian is an important part of the team in the diagnosis and management of such bleeding.

The surgeon is now left with a residuum of prospective patients who have bleeding from the various types of ulcer, from tumors, from gastritis and from hiatal hernia. If gastritis or hiatal hernia is the probable diagnosis, every attempt should be made to secure improvement by medical care and repeated transfusions. Emergency operations for the relief of bleeding from either one is likely to be quite unsatisfactory, and since the various tumors are relatively uncommon, emergency operation for massive bleeding is essentially that for gastric and duodenal ulcer. Bleeding from ulcer comprises nearly half of the massive upper gastrointestinal hemorrhages seen at Massachusetts General. Every such patient is considered as a candidate for emergency operation.

It follows that early diagnosis of the cause of the hemorrhage is essential. Often a definite history or even definite radiologic proof by previous gastrointestinal series is given. Even in these cases an emergency x-ray examination is carried out to exclude an ulcer in a difficult location. Examination of the esophagus, stomach and duodenum by Hampton's nonpalpation technique has proved very satisfactory, demonstrating the cause of the hemorrhage in nearly three-fourths of the cases. Caution is necessary, however. Varices may be collapsed from blood loss at the time of examination, ulcers may not fill, and blood clots may produce a confusing picture. However, if there is no definite history of ulcer and the results of roentgen examination are negative, a conservative approach is usually adopted. Transfusions are continued for several days if there is plenty of blood available, and operation is carried out only if there is a serious repetition of the hemorrhage, or if it continues steadily.

When definite diagnosis of hemorrhage from ulcer is made, the problem is simplified. As a general rule the patient should have an operation; the main consideration is to decide upon the safest time. Certain patients should be operated on very soon. These include those with gastric ulcer or anastomotic ulcer, and those with duodenal ulcer who are over the age of 50 years. Others are watched carefully and if there is any recurrent bleeding they are operated on at that time.

If an operation is to be carried out, at least four blood transfusions should be available with two large-bore intravenous needles in place. The operation should be planned for a time of day when there is sufficient personnel available. A skilled anesthetist is nearly as important as a trained surgical team. In no circumstances is the projected operation to be conceived as a simple procedure that will succeed regardless of technique. It is essential that extreme care be taken in every detail.

Many are the problems encountered in the operating room. Not infrequently a patient has been known to take a few whiffs of gas, vomit a huge quantity of blood and drown. Hence, a Levin tube should be inserted and the stomach irrigated before operation. Since this procedure will not remove large clots, however, a cuffed intratracheal tube should be inserted under topical anesthesia and the cuff inflated before general anesthesia is induced. The safest anesthetic agents at present seem to be gas-oxygen-ether or cyclopropane.

The abdomen is opened through an incision that will give best access to the stomach and duodenum. Since many of the patients are fat, a curved subcostal incision, cutting both recti, is best. Vertical paramedian incisions are used if the costal flare is acute, or if the source of the bleeding is not definite.

As soon as the peritoneal cavity is opened, an attempt must be made to determine the source and to assess the severity of the hemorrhage. If a definite ulcer is present and the stomach and upper small intestine full of blood, it must be assumed that active bleeding is continuing and immediate gastrotomy with removal of the clots and the control of the bleeding is necessary. If there is a definite ulcer but the stomach and upper intestine are collapsed, a relatively leisurely resection can be carried out.

The greatest difficulty in diagnosis arises when there is no clear evidence pointing to the source of the bleeding. Then the stomach and duodenum must be palpated carefully. This may involve cutting through the omentum to enter the lesser omental bursa to secure more accurate palpation. Then the entire small bowel must be examined carefully from the ligament of Treitz to the ileocecal valve. If the source of bleeding still cannot be found, the surgeon can proceed with either a gastrectomy and duodenotomy or he may continue with the so-called "blind" gastric resection.

There are disadvantages in both procedures. Gastrotomy does not always permit identification of the source of bleeding. Bleeding from the incision often is a confusing factor, and the technique is bound to involve some contamination. On the other hand it will sometimes lead to rapid discovery of a hitherto unsuspected lesion.

If a "blind" gastric resection is carried out, several safeguards are essential. The duodenum is divided without clamps so that the specimen will not be damaged by such trauma. The resected stomach should be examined promptly by the pathologist, since minute ulcers may be difficult to find

a few hours later. Before closing the duodenum the surgeon should inspect and palpate the lumen very carefully in order not to overlook a deep ulcer in the ampulla. The same inspection is necessary at the upper end of the stomach before it is anastomosed to the jejunum.

When an ulcer is demonstrated, the operation to be carried out is the standard gastric resection. The condition of the patient improves as soon as the bleeding point is controlled and he should remain in good enough condition to permit an operation that should be carried out with dispatch but which should not cut corners. It may be expected that the technical phases of this procedure will be relatively easy in about two-thirds of the cases and extremely difficult in most of the remainder. Obviously the best procedure is actual excision of the ulcer, and, when it is done, an open closure of the duodenum should be carried out to be sure that no bleeding point has been overlooked.

The surgeon's ability will be taxed in two particular types of cases. In the first the ulcer is in the duodenum and there is a large inflammatory mass in the first portion of the duodenum and head of the pancreas. Here the surgeon may feel that excision of the ulcer is impossible or dangerous since it may be in the second portion of the duodenum, and he may decide that there is sufficient duodenum proximal to the ulcer to allow closure excluding the ulcer. If he carries out this exclusion procedure, it is imperative that he inspect the open duodenum very carefully. With these deep ulcers a lateral erosion of the gastroduodenal vessel is likely. This will call for ligation above and below the point of erosion, else hemorrhage is likely to recur a few days after the operation.

In other instances there may not be enough duodenum to allow satisfactory closure. In these circumstances, in the author's opinion, it is best to assure complete control of the bleeding and then close the stump about a duodenostomy catheter. Done in a proper fashion, this is a life-saving maneuver and one that is far preferable to a deep dissection along the head of the pancreas.

The other type of ulcer that causes a great deal of technical difficulty is the one high on the lesser curvature of the stomach. The surgeon may decide that total gastrectomy is the only method that will be satisfactory. He should remember, however, that total gastrectomy is a time-consuming operation that may not be very well tolerated by a very ill patient. In cases in which it is decided that the ulcer cannot be excised and closure secured without compromising the esophageal lumen, some surgeons have used a less radical procedure with success. The left gastric artery is ligated and divided near its origin, while the ascending branch is ligated by suture ligature above the site of the ulcer near the esophageal hiatus and below the ulcer on the lesser curvature. Finally, complete control of the bleeding is secured by intragastric plication and the operation completed by a Madelener operation that involves resection of the distal three-quarters of the stomach, although the ulcer is left in situ. (The author has never had to use this method.)

After bleeding is controlled, a standard gastric resection is done. The type of anastomosis of the stomach to jejunum or duodenum needs no special consideration except that the one chosen should be the easiest which will avoid any angulation at the point of anastomosis. Since an anterior Hofmeister is more expeditious, it will usually be chosen in these circumstances.

Usually in these cases two catheters are placed in the jejunum. One runs back through the anastomosis into the stomach, providing decompression as long as necessary. This same decompression can, of course, be secured by the Levin tube, but retention of any nasal tube leads to increased difficulty with the respiratory tree and may be extremely serious in many of the old, poor-risk patients. The decompression tube will eliminate the dangers of late regurgitation and pulmonary aspiration that occur if the stomach has not been kept empty. This last factor has proved to be an important cause of death in aged, debilitated patients who have not had proper decompression. Meanwhile, a second catheter is inserted distally into the jejunum to provide alimentation in case stomal malfunction should occur. Much the same effect may be accomplished with the Alesen tube although, since its disintegration occurs about the seventh postoperative day, it does not serve for as long a time.

While some surgeons use these double jejunostomies routinely and others not at all, it is the author's opinion that they should be employed for specific indications, particularly in dealing with patients with bleeding ulcers, especially if they are old and malnourished, and have poor pulmonary reserve.

Finally, abdominal wall closure must be done with great care since dehiscence is a common complication in this poor-risk group. The liberal use of through-and-through sutures placed through the anterior rectus fascia but not through the peritoneum, well out of the line of incision, is the best way to take tension away from the sutures that close the peritoneum and fascia. Through-and-through sutures running through the peritoneum are to be avoided, for several instances of erosion of the underlying small intestine have been observed in connection with their use.

There are several details of postoperative care that merit emphasis. Antibiotic therapy is given, unless contraindicated, to aid in the prevention of pulmonary complications. Readjustment of the hematocrit to normal is carried out in two or three days when hemodilution has occurred and the photohemoglobin levels give a more accurate conception of the extent of anemia that is present. Overtransfusion must be avoided in the early stages; it can be as serious as undertransfusion. Extreme care is necessary with fluid and electrolyte replacement. Careful determination of the serum levels of electrolytes, avoidance of overtherapy with sodium, and the administration of adequate amounts of potassium are the most important features in the therapy.

The postoperative complications that are most common are pulmonary. Early ambulation, avoidance of abdominal binders, as little sedation as possible, and avoidance of gastric distention will eliminate most of them. Much more serious is the occurrence of pulmonary embolism. If the patient has a pulmonary embolus and survives, or if thrombophlebitis develops in either lower extremity, a bilateral femoral vein interruption should be carried out. Treatment with anticoagulants introduces an extra risk and is absolutely contraindicated if the ulcer has been excluded rather than resected.

Another postoperative complication that is very serious is recurrent massive hemorrhage. Several causes may be considered. Most commonly it occurs when a duodenal ulcer has been excluded and massive hemorrhage occurs one to five days later. If this is the case it is absolutely incumbent on the surgeon to reoperate on the patient to secure control of bleeding by ligature. A lateral erosion of the gastroduodenal artery will nearly always be fatal unless it is controlled. Of five patients at Massachusetts General Hospital who bled from this source, two were reoperated on and survived; the others died.

A second cause of hemorrhage is an inadequate suture line in the stomach. Usually such bleeding occurs immediately after operation but may occur as much as a week later. Usually it can be overcome by transfusions, but occasionally revision of the anastomosis is necessary.

When the resected stomach shows only extensive gastritis, a problem is presented, for postoperative hemorrhage can arise from the same disease in the gastric remnant. Here again an attempt is made to control the bleeding by transfusions. Powdered Gelfoam by mouth may be valuable. It seemed to help in a few cases observed by the author. In rare instances laparotomy and a total or near total gastrectomy may be necessary.

Finally the surgeon must consider the possibility that he has overlooked the actual source of bleeding, particularly if he did not carry out a thorough exploration and the pathologist could find no abnormality in the resected specimen. An uneventful postoperative course for ten days, followed by recurrent bleeding, is suggestive evidence that some lesion, such as a small bowel tumor, has been overlooked.

Other postoperative complications occur that are not specific, but are those which may follow any gastric resection. Consequently they will not be discussed in detail here.

The application of the foregoing principles by the author and his associates has been very gratifying. Sixty-four patients with massive hemorrhage from ulcer were operated on in the period 1946-1953. There were two deaths; both patients who died had had perforations several days before operation, one having general peritonitis and the other a large subhepatic abscess. Both died after a two-stage gastric resection, one from a perforated gallbladder and the other, a month later, from bleeding anastomotic ulcer. Meanwhile, six other patients had emergency operations for massive hemorrhage from some other source than ulcer. One patient died; he had a cirsoid aneurysm at the fundus of the stomach which required total gastrectomy.

These methods have been applied, at least in part, to patients in the ward services. Here, many other factors enter. The patients are in poorer condition; alcoholism and extreme obesity are common; and generally the condition of the patient at the time of admittance after the hemorrhage is more serious than that of private patients. Many surgeons are involved, and decisions are harder to make and slower to translate into action. Postoperative nursing care is apt to be more sketchy. It is not unexpected that the mortality is considerably higher. However, even here, when one considers that these patients have had very severe hemorrhage (the average amount of blood required during their hospitalization was 5,500 cc.) the results have been very gratifying in patients below the age of 60. The surgical mortality is 7 per cent in patients below that age. In older persons it rises very sharply. Two points regarding aged patients are to be emphasized. The first is that operation should not be delayed and as soon as a diagnosis is made of massive hemorrhage from ulcer, operation should be carried out. The second is that attention to the technical details of operation and postoperative care are extremely important.

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The Challenge of Chronic Disease

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• **The increasing millions of people with chronic disease constitute the greatest challenge to American medicine today. It is only during the very few years just past that any comprehensive answer to this challenge has been initiated.**

To physicians the most pressing needs in the total care of the chronically ill are:

1. Research in the care of the chronically ill as well as in the specific diseases causing chronic illness.

2. Coordination of all the services available in our communities.

3. Recognition by physicians of responsibility for the care of the chronically ill person, himself, as well as for treatment of his disease.

"NOTWITHSTANDING the great prevalence of chronic maladies, and the infrequency with which physicians are called upon to treat them, it is surprising that but few works have been published upon the subject, and those of a meager and unsatisfactory character, indeed, there is no single work extant that the author knows of, in any language, that is wholly devoted to the consideration of this class of disease—the material has existed, but it has been in loose and scattered portions."

These lines were written in 1867 by John King, professor of obstetrics and diseases of women in the Eclectic Medical Institute of Cincinnati. Although they were published some 90 years ago, it is a significant fact that they might almost have been written today. Even now, chronic illness as such is not a popular subject in the field of medicine. It has not inspired any great volume of literature since Dr. King penned his complaint; and what has been written is still "in loose and scattered portions."

Not until 1950 did the American Medical Association take action on the problems of chronic illness by joining with the American Hospital Association, the American Public Health Association and the American Public Welfare Association to form a Commission on Chronic Illness "for the purpose of studying the problems of chronic disease, illness and disability." Not until 1955 was this phase of medicine dignified with a monthly publication, the *Journal of Chronic Disease.*

What are the reasons for this? Why has chronic illness been such a step-child in the medical field? The first answer lies in tradition: Much of the burden of the care of the chronically ill has long been borne by people outside the medical world. The family, the social worker, the community, even the government—all have shared in the problem. The second answer lies in the fact that the medical imagination has been fired—and the greatest medical skill has been called forth—not by chronic illness, but by acute illness and by specific diseases. Modern medicine has found its greatest challenges—and done its greatest work—in bringing the virulent killers to terms. Our record during the past few decades is impressive; we have seen typhoid, diphtheria, tuberculosis, syphilis—to name only a few—yield to our research. And we are still pouring our energy, our time and our money into similar research programs. We are developing—almost daily—new wonder drugs, new vaccines, new treatments to overcome the diseases still rampant. This is necessary—and excellent—but it tends to dim our vision in recognizing a large and growing problem, a problem that promises to hold perhaps our greatest challenge in medicine today—that of the total care of chronic illness.

Paradoxically it is these very achievements in medicine which account for much of the increase in long-term illness. As the curve has gone down in the rate of acute disease, it has gone up in the rate of chronic disease. As life expectancy has increased, so has the incidence of chronic illness.

The changing pattern of the death rate from specific diseases in the United States during the past 50 years is shown in Table 1. Four specific types of disease are used to show the trend. Pneumonia, which may be considered a prototype of acute infectious disease, was listed as the primary cause in 9 per cent of all deaths in 1900. In 1952, it was down to 2.7 per cent. The relative incidence of death from tuberculosis, a second infectious disease which often progresses rapidly, dropped in the same period from 11.5 per cent to 1.6 per cent. Meanwhile malignant neoplasms rose in incidence from 3.6 per cent to 15 per cent, and heart disease, chiefly of the degenerative type, increased from 6.6 per cent to 37 per cent.

Chronic illness, then, has burgeoned as our medi-

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TABLE 1.—*Percentage of total deaths due to four selected diseases—United States, 1901-1953

	Heart Disease Per Cent	Cancer Per Cent	Pneumonia Per Cent	Tuberculosis Per Cent
1900	6.6	3.6	9.0	11.5
1910	9.9	5.1	6.7	10.7
1920	11.5	6.4	6.3	8.7
1933	16.62	10.0	6.5	5.6
1940	25.2	11.2	6.3	4.3
1950	36.9	14.5	2.8	2.3
1952	37.1	15.0	2.7	1.6

*Source: U. S. Bureau of Census, Mortality Statistics.

cal knowledge has increased. So has our population. From the combination of these two facts has come a staggering problem: Some 5.3 million people in the United States today are estimated to be long-term patients.

Who are these people? We know many of them as patients of ours. Some of them have the heart disease and the malignant neoplasms that are now high among the causes of death, as noted in Chart 1. Others limp about with one or another of the crippling, degenerative diseases with which we are all familiar. These are the people with whom we rarely have dramatic success. The antibiotics do not work miracles with them—we can not cure them with "shots" of a wonder drug. Bed rest may be an end for them rather than a means. True, we can sometimes relieve their pain and launch them on a course of therapeutic treatment, but by and large they are doomed to more or less prolonged inactivity and incapacity. Too many of them end up useless—and hopeless—members of our society.

And therein lies our challenge—in the total care of these millions of people. For while we are willing and eager to "give our all" in research in specific diseases, we are actually doing very little about this vast and growing army of the chronically ill.

It is time that we stopped and considered this: While we are placing so much emphasis on the problems of specific diseases—admittedly an extremely important thing—what are we doing about the problems of diseased people? Have we, in our zeal to conquer disease, actually come to care more about disease than about the persons afflicted with it?

We have some soul searching to do when we make our answer—when we consider the role that we, as physicians, are playing in the total care of the chronically ill. It is significant that one may pore at length over medical textbooks, review the etiology, symptoms, signs, and even treatment of various chronic diseases—and yet almost nowhere find reference to the long-term care of the chronically ill patient. Yet it is we, as physicians, who know better than anyone else how inseparably is the total care of the chronically ill bound up with the course of medical treatment. We see every day how the personal and social consequences of chronic illness play vital roles in the emotional and physical aspects of the disease process.

Who is undertaking the care of the chronically ill? As was mentioned previously, many persons enter into the picture. In our present society the active groups range from hospitals to families, from understaffed nursing homes to overcrowded veterans' hospitals, from social workers to kindly friends. There are growing numbers of rehabilitation programs being undertaken; many agencies devoted to specific diseases have been organized; industry is coming to be aware of the manpower resources among the handicapped; and there is an increase in the awareness of the public.

For more of a close-up, a look at the picture in San Francisco may be helpful. In that city of about 800,000 people, there are estimated to be some 27,500 who have long-term disabling disease or impairment. San Francisco has the usual private health and welfare organizations, public and private institutions, one rehabilitation center, four government hospitals, 13 voluntary general hospitals, two medical school hospitals, two private and one public long-term hospitals.

This is more or less typical of the facilities in any large city. Something which is not typical, however, is the San Francisco Chronic Illness Service Center established by a group of interested citizens some four and a half years ago—established because, despite this array of community resources, it was obvious that families with chronically ill patients were not able to find the facilities and services they needed.

The San Francisco Chronic Illness Service Center is primarily a counseling and referral service for the chronically ill and those charged with their care. From its experience with these patients, it has collected information that pointed the way to other functions. The people it was set up to help were those who, faced with the need to arrange long-term care, did not know what facilities were available or how to go about getting them.

In 1954, 788 of these people came to the center as new patients (and another 360 as old patients). The general characteristics of these patients are summarized in Table 2. There were more than twice as many women as men in the group and the majority were widowed or single. The average age of the patient was 70 years and more than half of them were between 65 and 85. Less than one-third of the patients were bedfast.

The most common request was for 24-hour nursing or supervisory care, with housekeeper attendant service second in frequency. Commercial nursing and boarding homes still represent the main solution for requests of this type. More than 50 per cent of

TABLE 2.—*Characteristics of patients interviewed at San Francisco Chronic Illness Service Center in year 1954*

DEGREE OF DISABILITY

Bedfast	246
Ambulatory	380
Semiambulatory	133
Unknown	29

LIVING ARRANGEMENTS

Living alone	219
Living with spouse	162
Living with relatives	213
Living with friends	19
In nursing or boarding homes	53
In hospitals	54
In institutions	20
Unknown	48

AGE

	No.	Per Cent
Under 25	11	1.5
25 - 34	23	3.1
35 - 44	23	3.1
45 - 54	35	4.6
55 - 64	97	12.9
65 - 74	190	25.2
75 - 84	287	38.1
85 - 94	83	11.0
95 - over	4	0.6
Unknown	35	

Average age 70.7 years

SEX

	No.	Per Cent
Male	252	32.0
Female	535	67.9
Unknown	1	0.1

MARITAL STATUS

Married	197
Single	120
Widowed	312
Divorced or separated	39
Unknown	120

the patients were able to pay the prevailing rate for the service they required, as contrasted to 40 per cent in 1951, despite an increase in rates during this period, suggesting that ability to pay is only one factor.

The experiences of the Chronic Illness Service Center point up some of the most pressing needs in the field of total care of the chronically ill: The need for coordination of available community service; the need for much greater dissemination of information; the need for a variety of services, not hospital beds only; the need for greatly improved home care.

Yet there are other even greater and more pressing needs—and this is where we as physicians come into the picture. Our first need is research in the care of the chronically ill as well as in the specific diseases causing chronic illness. This applies particularly to prevention and to rehabilitation—fields that are just now being opened up and given some exploration. In order to make this research effective, we must broaden considerably our medical scope; we must acquaint ourselves with the other groups working in the field of chronic illness; we must gather together from all sources all the available information about people who are chronically ill.

Our second need is to acquaint ourselves with all the facilities available in our communities. If none are available, we should initiate them. We should help coordinate these services and help make the community—including our industry—aware of the needs and potentialities of the chronically ill. In this regard it may be noted that home care offers many possibilities.

Our third need is our greatest—and our simplest: We must change our concept about our role in the total care of chronic illness. We must recognize the importance—and the potentialities—of the part we can play. We must assume our responsibility for the people who are chronically ill, as well as our responsibility for treating the diseases they have.

Only in this way can we begin to meet our great and growing challenge in the field of chronic illness.

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Complications of Peptic Ulcer in the Aged

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• Peptic ulcer is not an uncommon disease among the aged population. Thirty-five per cent of the patients admitted to the Los Angeles County General Hospital in a period of 12 months for treatment of peptic ulcer were more than 60 years of age.

The severity of this disease in the elderly group was evidenced by the high incidence of lethal complications requiring operation—one case in every four.

The mortality rate from operation for peptic ulcer complications is related to the factors of concurrent disease, the urgency of operation and the selection of a suitable operation.

INCREASING INTEREST is being shown in the care of aged patients, owing largely to improved methods that have reduced the hazards of operations on older persons. Cole[4] and others[1,3,6] have observed that major operations may be well tolerated by elderly patients unless the procedure be of great magnitude, is done in an emergency or is associated with severe concurrent disease. This interest is also a result of the pronounced change in the population of this country during the past 50 years. At the beginning of this century only one in every 25 persons was 65 years of age or over; now the ratio is about one in 12.[2]

Although peptic ulcer has been considered a disease of young and middle aged persons, there have been recent reports that more than 20 per cent of the patients admitted for hospital treatment of peptic ulcer are over 60 years of age.[10,11] At the Los Angeles County General Hospital during the 12 months ended June 30, 1954, some 35 per cent of the 964 patients admitted for conservative or surgical treatment of peptic ulcer were over 60 years of age. With a progressively increasing life expectancy it can be expected that this disease will continue to become more prevalent.

The etiological factors of this high incidence of peptic ulcer in the elderly are interesting to consider. One might expect that with the serenity of mind and the decreasing metabolic activity of old age, the factors that bring about ulcer would be reduced, but apparently this is not true. Vanzant[12] and coworkers studied the influence of age on gastric acidity and found only a slight decrease in the mean free acid after 60 years of age, but more of a decrease in men than in women. In studies of the gastric secretion of aged patients with peptic ulcer, it has been observed that in many cases there is pronounced elevation in gastric acidity. In addition to increased gastric acidity, vascular changes in the arteries of the stomach wall, as demonstrated by Meyer and Saphir,[9] may decrease the normal blood supply and thereby impair the vitality of mucosal cells in the stomach and duodenum. In such circumstances ulceration might develop, even with normal acid values or with very little increase. Psychogenic factors such as loss of economic security, lessened ability to adjust to the stress of life, and other emotional disturbances may influence vascular and secretory change in the stomach and thus increase the susceptibility of the mucosa to injury.

In order to determine the severity of peptic ulcer in elderly persons, a study was made of the complications of peptic ulcer in 541 patients over 60 years of age who were operated on at the Los Angeles County General Hospital during a ten-year period from 1944 to 1953 (Chart 1). Approximately one patient in four above 60 years of age with peptic ulcer admitted to the hospital had severe complications requiring operation. It would appear from observations made on these elderly patients that they do not react to the pain of peptic ulcer as do younger patients, and they do not seek medical care until some severe complication occurs.

Perforation

Of the patients with acute perforation in this series, 68 per cent gave a history of previous symptoms of ulcer. Many of these patients complained of prodromal symptoms of pain or distress for a few days or weeks before the actual perforation occurred. The longer the duration of acute symptoms before operation, the higher the mortality rate. Over half of the patients had acute symptoms for more than 12 hours before operation was done, and in this group the mortality was twice as high as it was for those who had symptoms less than 12 hours. One factor in the delay of operation is the less dramatic onset of symptoms in many older patients, hence a tendency not to call a physician early. Another factor

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Chart 1.—Complications indicating operations for peptic ulcer in persons over 60 years of age—the incidence of occurrence in 541 cases of peptic ulcer at the Los Angeles County General Hospital during the years 1944 to 1953.

TABLE 1.—*Data on surgical treatment of peptic ulcer perforation in patients over 60 years of age*

Operation	Cases	Deaths	Mortality Rate (Per Cent)
Closure of perforation	210	52	25
With gastroenterostomy	3	3	50
With pyloroplasty	2	1	
With appendectomy	3	0	
Gastric resection	2	1	
Total	220	57	26

TABLE 2.—*Data on operations for peptic ulcer hemorrhage in persons over 60 years of age*

Operation	Cases	Deaths	Mortality Rate (Per Cent)
Gastric resection	106	27	25
Vagotomy and pyloroplasty	27	5	19
Wedge excision of ulcer (gastric)	5	1	
Vagotomy and gastroenterostomy	4	0	
Vagotomy	4	1	
Pyloroplasty	4	0	
Suture bleeding vessel	1	1	
Total	151	35	23

is that after the patient is in the hospital it may be several hours before a diagnosis is made, owing to atypical clinical signs and symptoms. The total mortality in 220 cases of perforation was 26 per cent (Table 1), a high rate for perforation, emphasizing once more that emergency procedures in the aged entail a much higher risk than elective operations. Simple closure was performed in 210 cases with a mortality rate of 25 per cent, but in the few in which gastric resection or additional procedures such as gastroenterostomy or pyloroplasty were performed, the mortality rate was 50 per cent. This was in sharp contrast to corresponding data on the patients who had subsequent elective operation for recurrence after perforation. In this latter group of 16 operations there were no deaths.

Hemorrhage

Bleeding was the most common complication. It occurred in 53.4 per cent of patients in this series. Hemorrhage was severe enough in 28 per cent of these cases to be the primary indication for operation. In approximately two-thirds (63.5 per cent) of this group the bleeding was classified as massive, as indicated by systolic blood pressure below 100 mm. of mercury, hemoglobin content 7.5 gm. or less per 100 cc. of blood, and bleeding not controlled with multiple transfusions. It has been observed that both the frequency and mortality of bleeding from peptic ulcer increases in direct proportion to the age of the patient.[7] In cases in which hemorrhage including massive hemorrhage was the chief indication for gastric operation, the mortality rate was 23 per cent, but when bleeding patients could be operated on electively during a remission the mortality rate was only 9 per cent.

The operative procedures most frequently used in the present series to stop bleeding were gastric resection and vagotomy with pyloroplasty (Table 2). Further observation is required for the evaluation of the long term results of the latter operation. The operative procedure of choice for hemorrhage is one which will stop the bleeding immediately and also provide definitive treatment of the ulcer. In acute bleeding duodenal ulcer a longitudinal incision is made through the anterior wall of the stomach and duodenum crossing the pyloric ring. A transfixion suture is taken in the base of the ulcer to control the point of bleeding. After the hemorrhage has been controlled at operation the condition of the patient usually responds sufficiently so that a definitive procedure may be performed. Occasionally even after control of the hemorrhage and multiple transfusions having been given during the operation, the patient's condition will not show improvement. In such a situation suture of the bleeding vessel without further definitive surgery is justified.

Obstruction and Intractability

Approximately one-third (31 per cent) of the patients in the series required operation for pyloric obstruction or intractability. Of the patients with obstruction, 26.8 per cent had a history of previous perforation and one patient had had three perforations before definitive operation was done. Gastric resection was the operative procedure most commonly carried out. It was associated with a mortality

TABLE 3.—*Data on operations in cases of peptic ulcer obstruction and intractability in patients over 60 years of age*

Operation	Cases	Deaths	Mortality Rate (Per Cent)
Gastric resection	111	12	10.8
Pyloroplasty and vagotomy	25	1	4.0
Gastroenterostomy	16	2	12.5
Gastroenterostomy and vagotomy	12	2	16.6
Vagotomy	4	0	
Closure penetrating ulcer	1	0	
Wedge resection ulcer (gastric)	1	0	
Total	170	17	10.0

rate of 10.8 per cent (Table 3). Duodenal stump leakage was present in three of the 12 patients who died following operation. When resection is attempted in the presence of considerable edema and induration surrounding the ulcerative area the risk of leakage is increased. The delay in wound healing present in the aged could be a further causative factor in the increase in duodenal stump leakage. The patients who had vagotomy with gastroenterostomy were considered the poorer risk patients, and the mortality rate was higher (Table 2).

The mortality resulting from surgical treatment of peptic ulcer in the aged is related to three important factors: The presence of concurrent disease, the urgency of operation and the selection of the operative procedure.

Concurrent disease may be controlled to some extent before operation, but continues to pose a constant risk. This is demonstrated by the fact that the mortality rate due to all causes in patients over 60 years of age at the Los Angeles County General Hospital is 18 per cent, only a little less than the mortality rate for patients in the same age group operated on for peptic ulcer—20 per cent.

The urgency of operation is a very large factor in the mortality of the patients operated on for peptic ulcer. Excluding the cases of perforation and massive hemorrhage in which operation had to be done in emergency, the mortality rate in which elective operation was done in the old age group is 9.7 per cent. It would appear from these findings that there could well be increased attention given to indications for elective operation in peptic ulcer of the elderly in an attempt to prevent the frequent serious complications.

The selection of an operative procedure is influenced by the condition of the patient, the urgency of operation, and the kind of complication. The data from this study would support the following criteria for choosing a suitable operation in the treatment of peptic ulcer complications. Gastric resection is a procedure which produces very satisfactory definitive results, but entails a considerable mortality rate if used routinely. Its use for acute perforation of peptic ulcer in the aged is not indicated because of the associated high mortality rate. In cases of massive hemorrhage with the patient in poor condition, ligation of the bleeding point followed by pyloroplasty and vagotomy can be done with a lower mortality than with gastric resection. In elective situations, gastric resection can be performed with a mortality of less than 10 per cent, and vagotomy with pyloroplasty can be done with a mortality of less than 5 per cent. Pyloric obstruction or a penetrating duodenal ulcer may be associated with so much inflammatory reaction or chronic induration that vagotomy and gastroenterostomy may be the operation of choice. Gastroenterostomy without vagotomy has been frequently recommended as a satisfactory procedure for peptic ulcer in the aged, especially for the complication of pyloric obstruction.[5] This operation in the present series was not an adequate procedure to prevent the formation of stomal ulcer even in patients who are in the older age group. There were nine cases of marginal ulcer following gastroenterostomy in patients over 65 years of age, the oldest being 78 years old. The interval between gastroenterostomy and the occurrence of bleeding varied from four months to more than 20 years. In contrast, after adequate gastric resection there was no case of proven marginal ulcer. A possible explanation for these results may be found in the observation that gastric acidity in patients with pyloric obstruction was not found to be uniformly decreased. Measurement of free acid in these patients did not follow any pattern, but varied from hypochlorhydria through normal values to hyperchlorhydria.

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The California Morbidity Survey

A Progress Report

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• **In May of 1954 the California State Department of Public Health began a one-year household sample survey covering the health status of the population of California.**

Preliminary results from the survey indicate that chronic conditions cause approximately three-quarters of the disability in the California population, while acute conditions are responsible for the remainder. Acute upper respiratory tract disorders account for about half of the total disability from acute conditions. In the older population group, there is a greater amount of disability outside than within metropolitan areas. No significant differences in disability status appear between recent migrants to California and longer term residents.

Forthcoming results from the survey, answering more detailed questions, will provide information needed by a number of private and state agencies.

FOR SOME TIME now the California State Department of Public Health, as well as other agencies concerned with health, has been acutely aware of the lack of information regarding the health status of the population.[4] This has been especially true in regard to current knowledge of general morbidity. Special studies have provided fragmentary data covering limited geographic areas for specific illnesses. In addition, some information has been forthcoming from death certificates and some on diseases for which reporting has been required. The sum total of all of these, however, has been far from comprehensive.

For these reasons the Department began, in 1948, to explore the possibilities of undertaking research in the measurement of general morbidity. Representatives of the California Medical Association, California Physicians' Service, Association of California Hospitals, University of California School of Public Health, Stanford University, California Conference of Local Health Officers, State Department of Employment, and the State Department of Industrial Relations agreed to serve as a Project Advisory Committee. A number of approaches were discussed. One of these would involve studies of special population groups or disease categories. This method, however, was subject to at least two serious objections. First, it is of limited value when the subject under investigation is the range of morbidity rather than a single disease or group of diseases. Second, the method would be too expensive. It was also decided that any attempt to obtain data on general illness through the vehicle of physicians' reports would result in an unreasonable demand upon the physicians' time and would, in fact, be unworkable.

After about two years of discussion and planning, the funds to begin the current project became available, in May 1950, through a grant from the National Institutes of Health. The investigation proceeded in two phases.

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Phase One—The San Jose Study

Before starting the survey on a statewide basis, it was decided to pretest alternate methods in a limited area. The city of San Jose was selected for the pretest because it was an area in which the population was reasonably typical of the population of the state, the community was more or less self-sufficient with respect to medical facilities, and the area was large enough to permit the drawing of methodological conclusions. Accordingly, an intensive study was conducted in San Jose in the spring of 1952. The results of the San Jose household survey were compared with data gathered from hospital records and other medical records in order to test their validity.[2] Information gained from the study in San Jose led to the choice of the procedures to be used in the statewide project.[1]

Phase Two—The Statewide Survey

The results of the San Jose pretest having proved satisfactory, the statewide morbidity survey began in May 1954 and was scheduled to continue for one year. It embraced a sample of 12,000 households or approximately 35,000 persons. Each week interviews are conducted with about 250 households throughout the state. For selecting the sample the State Health Department contracted with the United States

TABLE 1.—*Number of persons disabled on average day by selected conditions (provisional data)*
May 1954-January 1955

Conditions	Estimated Number Persons per 1,000	Per Cent
All conditions	63	100
Chronic conditions*	46	73
Diseases	39	62
Effects of earlier injuries	7§	11
Acute conditions	17	27
Upper respiratory†	7§	11
Gastrointestinal‡	2§	3§
Other	8§	13

*In addition to conditions such as heart disease, asthma, diabetes, etc., which are normally classed as chronic, this category includes any other conditions which have lasted three months or longer or which have caused chronic or repeated trouble.

Sixth revision International List Numbers: (†) 470-481. (‡) 048, 049, 482, 544.2, 543, 571, 784.1, 785.5 and 785.6.

§Relative sampling error greater than 10 per cent.

Source: State of California, Department of Public Health, Bureau of Chronic Diseases, California Health Survey.

Census Bureau, since it appeared that this operation could be best performed by an agency experienced in large scale sampling.

The questionnaire that is used obtains information on all types of illness or injury. In addition, a substantial amount of demographic and social information is gathered, such as data on age, sex, marital status, occupation, urban or rural residence, and type of health insurance coverage.

Although data collection for the survey is not yet completed, it has been possible to obtain some preliminary illustrative data from the first 42 weeks of the survey, covering the period May 1954 through January 1955.

Table 1 illustrates the relative contribution of various broad categories of disease to total disability. Days of disability as counted in the survey include all days on which a person was kept in bed, kept from going out of doors, or otherwise kept from his usual activities because of illness or injury. Each day in the period, on the average, 63 of every thousand Californians were disabled. Of these, approximately three-quarters were disabled by chronic conditions. In addition to conditions such as heart disease, asthma and diabetes, which are normally classed as chronic, the "chronic conditions" reported here also include any other conditions which have lasted longer than three months or which have caused chronic or repeated trouble. The remaining one-fourth of the disabled were affected by acute conditions. Almost half of the persons disabled by acute conditions were disabled by acute upper respiratory diseases.

Table 2 indicates the average number of persons in broad age groups who were disabled by acute upper respiratory and acute gastrointestinal disorders on the average day in the period May 1954-June 1955. The proportion disabled by respiratory

TABLE 2.—*Number of persons disabled on average day by all conditions, acute upper respiratory,* acute gastrointestinal disorders† (provisional data)*
May 1954-January 1955

Age	Estimated Number of Persons per 1,000		
	All Conditions	Acute Upper Respiratory*	Acute Gastrointestinal Disorders†
All ages	63	7§	2§
0-14 years	44	15§	2§
15-44 years	47	5§	2§
45-64 years	79	5§	2§
65 years and over	179	4§	2§

Sixth revision International List Numbers: (*) 470-481. (†) 048, 049, 482, 544.2, 543, 571, 784.1, 785.5 and 785.6.

§Relative sampling error greater than 10 per cent.

Source: State of California, Department of Public Health, Bureau of Chronic Diseases, California Health Survey.

TABLE 3.—*Number of persons disabled on average day by metropolitan* and nonmetropolitan areas (provisional data)*
May 1954-January 1955

Age and Sex	Estimated Number of Persons per 1,000		
	Total	Metropolitan Areas	Nonmetropolitan Areas
All ages, total	63	61	72
Male	56	54	65§
Female	70	68	80§
0-14 years, total	44	45	41§
Male	44	44§	44§
Female	43	45§	37§
15-44 years, total	47	47	47§
Male	34	33§	39§
Female	58	58	55§
45-64 years, total	79	77	91§
Male	74§	74§	71§
Female	84§	79§	113§
65 years and over, total	179	163§	251§
Male	172§	155§	238§
Female	186§	169§	265§

*Metropolitan areas include the following counties: Alameda, Contra Costa, Fresno, Los Angeles, Marin, Orange, Sacramento, San Bernardino, San Diego, San Francisco, San Joaquin, San Mateo, Santa Clara, Solano. (See U. S. Bureau of the Census, U. S. Census of Population: 1950. Vol. II, Characteristics of the Population, Part 5, California, Chapter B. U. S. Government Printing Office, Washington, D. C., 1952, pp. v-vi, xvi.)

§Relative sampling error greater than 10 per cent.

Source: State of California, Department of Public Health, Bureau of Chronic Diseases, California Health Survey.

disorders is substantially greater in childhood than in later life, while the proportion disabled by acute gastrointestinal disorders shows little variation with age.* These data suggest, of course, the operation of some immunity or exposure factor in acute upper respiratory disease, which is quite different from that in acute gastrointestinal disease.

Table 2 also indicates that approximately one-third of all disability during the first 14 years of life is due to acute upper respiratory conditions.

Table 3 compares the average daily disability in metropolitan areas, where about 80 per cent of Californians live, with that of corresponding age-sex groups in the nonmetropolitan (principally rural)

*Similar age differentials are observed when all respiratory and gastrointestinal conditions are considered, regardless of whether or not they caused disability.

areas in the state. In general, up to the age of 45 years, the disability rates are about the same in each area. Thereafter, average daily disability is greater for females in the nonmetropolitan areas, and after age 65 it is greater for males as well.

Table 4 examines the question as to whether there are differences in the health status of recent migrants to California, compared to long-term residents. At ages above 15 years, only slight differences in average daily disability appear between comparable age groups.

The findings here presented regarding the distribution of broad categories of illness within selected segments of the population is only a small sector from the range of materials which will emerge from the analysis of the California Health Survey.

It is anticipated that the statewide morbidity survey will bring to light facts which will be of great value in answering such questions as:

1. What are the major and minor causes of illness today in California?

2. How much time is lost from work because of rheumatism, heart disease, diabetes, home accidents?

3. How many persons are there in California who require partial or complete nursing care?

4. What changes in health status occur after age 65?

5. How does hospitalization experience vary by age, sex, veteran status, health insurance coverage, and other population characteristics?

6. What kinds and amounts of illness occur in the various occupational groups?

7. How are smoking practices related to selected types of morbidity?

8. What is the volume of medical care services in the population, and how are they distributed with regard to type of service, and place where medical attention is rendered?

The answers to these and other questions will aid physicians, voluntary agencies, and health departments in evaluating the progress being made in the reduction of specific diseases. Also, such information will yield indices of the health status of various population groups. Thus, morbidity information needs of a number of private and state agencies will be met.[3]

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TABLE 4.—*Number of persons disabled on average day by length of residence in California* (provisional data) May 1954-January 1955*

Present Age	Estimated Number of Persons per 1,000 Total	Last Move to California† 1941 and Before	Last Move to California† After 1941
All ages	63	67	57
0-14 years	44	‡	‡
15-44 years	47	44	49
45-64 years	79	81	76§
65 years and over	179	177	186§

*The questions were: "Have you ever lived any place besides California, not counting time away at school or in the Armed Forces?" (If yes) "When did you last move to California?" (†) Or has always lived in California.

§Relative sampling error greater than 10 per cent.

‡Data not comparable.

Source: State of California, Department of Public Health, Bureau of Chronic Diseases, California Health Survey.

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APPENDIX

Definitions and Explanations

Source of data. Information on illness in the population of California is obtained through personal interviews of a weekly sample of households throughout the state selected by scientific sampling methods. The data for this report are based on the combination of 42 weekly samples, comprising about 10,500 households. The sample in Los Angeles County was doubled for sample weeks 27 through 38. Data presented are provisional, and are subject to sampling and other fluctuation.

Population coverage. The data presented relate to the resident noninstitutional population of California, exclusive of persons living on military posts. Thus, this report does not cover nonresidents of California, persons living on military posts, inmates of penal institutions, homes for the aged, infirm, and needy, mental institutions, tuberculosis sanitariums, and similar places.

Reliability of estimates. Since the estimates are based on a sample, they may differ somewhat from the figures that would have been obtained if all households, rather than a sample, had been interviewed, using the same questionnaire, instructions and interviewers. As in any survey work, the results are also subject to errors of response and of reporting.

Sequelae of Encephalitis

Report of a Study After the California Epidemic

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• **In a study of almost 500 patients to determine residual effects, the sequelae of both St. Louis and Western equine encephalitis were more prominent in the younger age group. Infants under three months with Western equine encephalitis had the greatest central nervous system damage. Forty-four per cent of this entire group had sequelae.**

In patients between one and four years of age, the incidence of sequelae was less. The Western equine infection was associated with the more disabling residual damage. Postencephalitic convulsions were fairly common in the younger patients with Western equine disease, but not in the St. Louis group. After the age of five the sequelae rate dropped. In all age groups the Western equine residual changes were more severe than the damage of St. Louis infection.

Some infants, children and adults showed remarkable improvement from sequelae even as much as two years after the abnormalities occurred.

With the longer period of follow-up, some late sequelae were noted in children and adults, primarily among those who had Western equine infection.

ENCEPHALITIS has a variety of causes—infectious, chemical, allergic, and some yet undetermined. In the infectious group, viruses, bacteria, rickettsiae, fungi and protozoa may be culpable.

Of the many viruses, two in particular cause encephalitis of kinds commonly encountered during the summer months in the California Central Valley. These two—the Western equine and the St. Louis types—have certain features in common. They are both transmitted by the mosquito. The reservoir of infection is thought to be birds, with man an incidental victim. Both cause similar clinical illnesses. The two viruses are similar and are classified as being of the arthropoid-borne variety. The Western equine virus was isolated in 1938 and the St. Louis virus in 1939. It was not until 1945 when paired specimens of blood were used to measure the rise in titer that accurate serological data were available and could be used by the California State Virus Laboratory to definitely identify suspected cases of Western equine or St. Louis encephalitis. The number of confirmed cases of encephalitis for each year from 1945 to 1954 inclusive is shown in Table 1.

Of 753 cases of infectious encephalitis reported to the State Department of Public Health in the 1952 epidemic, 428 were confirmed as either Western equine or St. Louis, and 84 were reported as "inconclusive." Reviews covering epidemiology, vector control, clinical and laboratory diagnosis and neurological and psychiatric sequelae in the 1952 epidemic were published in 1953.[1, 4, 5, 6, 7] Because of this sizable case material, a group was formed to review the acute illness, the convalescent phase, the resulting sequelae and the late complications of these infections. The first detailed report of this group appeared in April, 1955.[2] This included a review of 334 positive and "inconclusive" cases from the 1952 group, as well as 113 cases from the 1950, 1951 and 1953 records. The "inconclusive" cases were those in which there was a suspiciously high antibody titer in the beginning and no rise later, those in which there was some rise in the initial titer but not high enough to be diagnostic and those in which there was only one suspicious specimen.

For purposes of the study herein reported, "inconclusive" cases were omitted and confirmed cases from the period 1945-1950 and from the year 1954 were added, making the total number of confirmed cases 494, of which 362 were Western and 132 St. Louis. Since the proposed study is only half completed, it was felt that a more critical analysis could be made by using only the proven cases. At a later date when more definite laboratory data may be available and further follow-up material obtained, the "inconclusive" group will again be analyzed. The tentative conclusions reached in this presentation are being drawn from observations on the confirmed group only. By reviewing nearly 500 cases and by increasing the observation span from four years, as originally reported, to almost ten years it was possible to get a better view of long-term residual effects and possible delayed complications of these diseases.

It should be emphasized that the present report deals only with the group of 494 patients who were

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examined, not the 953 total number of cases (Table 1).

One of the outstanding features of these diseases is the age of the patients who had them. Forty-nine per cent of all the cases of Western equine encephalitis and 35 per cent of all the St. Louis cases were in patients under 10 years of age; and 28 per cent of patients in the Western equine group were less than one year and 20 per cent less than three months of age. None of the four patients who had St. Louis encephalitis when less than one year old has yet been examined. Beyond the age of ten years, the Western equine cases were fairly evenly distributed, while the St. Louis cases were concentrated in the young adult group.

TABLE 1.—*Number and percentage of Western equine and St. Louis encephalitis patients examined, by year of illness*

Year of Illness	Total Patients	Patients Examined	
		Number	Per Cent
1945	54	4	7
1946	28	2	7
1947	38	11	29
1948	2	1	50
1949	31	7	23
1950	160	77	48
1951	55	28	51
1952	428	295	69
1953	36	18	50
1954	121	51	42
Total	953	494	52

SEQUELAE

In general, the younger the patient, the higher the incidence of sequelae. The highest incidence of sequelae was in infants under three months of age. Forty-four per cent of the patients in that age group had residual effect and the sequelae were the most severe, often including a continuation of convulsions, pronounced pyramidal and extrapyramidal signs, along with mental retardation. In some cases there were only mild motor signs or convulsions that were controlled by medication. Usually in cases of continuing convulsions there was no period of respite from them after the acute phase of the disease, although in a few instances there were periods of 12 to 18 months without convulsions before they resumed. Of the 72 patients less than three months of age, 19 had mental retardation (with or without motor and convulsive disorders) of sufficient degree to make placing them in an institution seem a future possibility.

Some of the infants who were originally reported as having serious sequelae later improved considerably and some that had milder but definite residual effects became entirely normal. On the other hand, one child had encephalitis at two months, had no evident residual effect and did well for another 15 months. Then left hemiplegia, convulsions and mental deterioration developed without evident cause. Thorough neurological study was carried out and there was no evidence of damage from a new infection, injury or space-occupying lesion.

The incidence of sequelae in patients more than three months and less than one year of age was around 25 per cent. These infants had less extensive cerebral damage. The convulsions were more easily controlled and both motor impairment and mental retardation was less. Some of these infants also showed pronounced improvement in six to eighteen months.

In patients between the ages of one and four years, there were about as many cases of St. Louis as of Western equine encephalitis, and in both groups the incidence of sequelae was about 25 per cent. In the St. Louis cases there was only mild pyramidal damage without retardation or convulsions. (It should be noted that in no case of St. Louis encephalitis, in children or adults, in which examination was carried out were there any convulsions after the acute illness.) In the Western equine cases there were more extensive pyramidal and extrapyramidal involvement and convulsions, but only occasionally retardation in this age group. One patient discharged from the hospital as a "vegetable" was essentially normal after 18 months. Until recently it was believed that unless a child had convulsions during the acute illness, it was unlikely that convulsions would occur later. Now, however, a child who had no convulsions during the acute illness has had generalized convulsions 18 months later.

Many of the patients from five years of age on up, some who had had St. Louis and some Western equine infection, were described as being nervous and irritable. This lasted from two months to two years after the acute illness. Since these symptoms completely disappeared, they are not now considered as sequelae, although at the time of the first report, when many of the patients still had these symptoms, they were recorded as sequelae.

In the five to nine age group, both the St. Louis and the Western equine viruses caused motor damage and mental retardation. For both diseases the incidence of sequelae was only around 10 per cent. In this age group also the residual effects of Western equine infection were more severe and associated with seizures.

In patients above the age of ten there were no significant sequelae of St. Louis encephalitis, with the possible exception of one elderly woman in whom bilateral cerebellar and extrapyramidal signs developed; and there is some question as to whether or not these signs might be related to vascular accident. There was likewise a low incidence of residual

effect from Western equine infection, but there were cases of motor damage, seizures, intellectual deterioration and emotional disturbances. One patient, a man 73 years of age, who was severely ill and comatose with Western equine encephalitis in 1950, was mentally retarded and emotionally labile after the acute phase. His condition was essentially static for two years, and then a peculiar syndrome developed—a sudden sea lion-like bark with symmetrical jerking of all four extremities for one to two minutes, without change in consciousness. These spells in part resembled the "cerebellar fits" of Hughlings Jackson. Because of the deteriorated state of the patient and the frequency of these spells, he was put into an institution for a while. Later he returned home.

Signs of Parkinsonism developed in two patients. One had Western equine encephalitis at age 57 in 1950 but not until 1954 did signs of a left-sided rigidity, tremor and cogwheel rigidity appear. The other had encephalitis in 1952 and when examined in 1955 had mild Parkinsonian signs in the face and in gait. Three patients had acute psychotic episodes after Western equine infection, and had to be hospitalized. A fourth had milder emotional changes, but moderately severe intellectual damage.

Fulton and Burton,[3] who made a study of cases of Western equine encephalitis in Saskatchewan, Canada, noted the high incidence of residual changes in children. With this in mind, they wondered if unrecognized cases in adults would later produce mental symptoms. They performed neutralization blood tests on patients in two mental hospitals and found a significant titer in far more of them than would be statistically ordinary. By review of records it was found that some of these patients had had clinical encephalitis two to four years previously. Those observations are compatible with findings in the present study that adults may develop serious postencephalitic residuals after three years of normalcy.

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Emphysema in Chronic Bronchitis and Asthma

A Practical Therapeutic Approach

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• **Asthma and chronic bronchitis are characterized by bronchial occlusion in expiration. Acute spasmodic asthma, if prolonged, may bring about changes in thoracic structure and diaphragm position which can result in permanent pulmonary inefficiency unless this tendency is corrected by breathing exercises. As expiratory obstruction becomes more chronic, irreversible emphysema develops. Thereafter therapy for bronchopulmonary insufficiency is necessary. The approaches to such therapy have been outlined and briefly evaluated, with emphasis upon the value of intermittent positive-pressure therapy.**

VERY OFTEN discussions of asthma and chronic bronchitis are ambiguous because of a tendency to regard these terms as self-explanatory, to assume that each represents a well-known and well-defined disease process. The fact is, there is no basis upon which sharp distinctions can be made between the two conditions. In the clinic, one occasionally observes a patient with a history of infrequent and transient attacks of wheezing, and sometimes one sees patients with continuous obstruction, but in the great majority of patients with a complaint of bronchial obstruction not due to a tumor mass or foreign body, the disease lies somewhere between the two extremes.

Furthermore, differentiation cannot be made between asthma and chronic bronchitis on etiological grounds, since both involve allergy, infection and very often a good deal of the unknown in addition. The pathological features are also similar. The most characteristic pathological appearance in both conditions is a thickening and infiltration of the mucous membranes, although the lungs in acute spasmodic asthma have been described as showing greater hypertrophy of bronchial musculature than is characteristic of chronic bronchitis. Tenacious secretions are a prominent feature of both conditions.

Thus, on the basis of present knowledge, it is likely that we are dealing with one rather amorphous syndrome whose clinical manifestations may vary widely, rather than with two distinct conditions. However, for purposes of discussion some kind of distinction is necessary. In terms of the present discussion, the most important basis for distinction between asthma and chronic bronchitis is the permanence of the consequent damage to lung structure.

Both conditions, of course, cause overinflation of the lung—a generalized obstructive emphysema which is clinically different from, for example, senile and compensatory emphysema. It is proposed here to use the term *asthma* for the condition in which this generalized obstructive emphysema is reversible, and to classify cases in which emphysema is irreversible as *chronic bronchitis*. This is of course no simple distinction to make, but it is nevertheless a useful clinical basis for distinguishing the two conditions in order to plan treatment.

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ASTHMA

Acute spasmodic asthma is observed most frequently in children and young adults, although it often occurs in later life also. Whether or not there will be secondary consequences that must be treated depends upon the duration of the condition. During the acute attack, severe overinflation of the lung occurs as a transitory phenomenon. If acute attacks occur often enough and last long enough, asthma may pass insensibly into chronic bronchitis—that is to say, permanent obstructive emphysema will develop. However, the authors have observed a number of young adults with a history of severe childhood asthma that disappeared in the early teens, leaving no detectable loss of elasticity of the lungs, although in some cases there was more or less respiratory insufficiency due to malformation of the chest cage.

A child who spends a good deal of his life attempting to breathe out from overinflated lungs frequently develops a typical pigeon chest. The physiological basis for this is easy to understand. The chest is held for considerable periods of time in the hyperinflated position. During these periods powerful expiratory muscles, which are not normally used to any great extent except on effort, act on the rib cage, attempting to lower it. These muscles do not act uniformly over the whole rib area, however,

but on certain parts only. Consequently, over a prolonged period the rib cage is actually distorted by these expiratory muscles. The diaphragm is stretched by hyperinflation also, thus tethering the lower ribs and giving rise to the typical bowing of the chest. In adults similar changes occur, although as a rule they are less pronounced because the rib cage is firmer.

Treatment

The primary objective of the physician is of course to eliminate or at least control the spasm. However, the search for exciting agents in the patient's environment, the use of spasmolytics and the administration of other measures is beyond the scope of this discussion. In any patient with acute spasmodic asthma, breathing exercises should be instituted and continued until the asthma is completely controlled and respiratory dynamics are normal.[8] Exercises should be aimed at achieving the maximum excursion of both the rib cage and the diaphragm. Thus mobility and normal dimensions and configuration of the thorax can best be achieved. Since the malleability of the thorax is directly related to age, the younger the patient the more vigorous must be the therapy of the condition.

CHRONIC BRONCHITIS

Typical explosive allergic asthma is the common pattern but not the only one in children. Many children from the beginning do not get complete freedom between attacks, and a whole complex of disorders soon appears, giving a clinical picture differing considerably from that of asthma as previously described. Such a syndrome is very likely to persist through childhood into adult life. It soon becomes clear that the usual approaches to bronchial allergic disease—investigation into possible allergens, the prescription of antispasmodics and so forth—are ineffectual in these cases. The problem becomes the management of a chronic and increasing disability.

Exactly the same clinical picture may appear in adults, although the chronic bronchitis which appears in middle age usually is associated with a history of respiratory disease. At times this chronic bronchitis seems to be the end-product of a long history of spasmodic asthma, with insensible merging of attacks and disappearance of specific causative allergens, until the obstructed expiration is always present and there are periods of acute exacerbation. Sometimes it develops following a lower respiratory tract infection, and sometimes there is a clear relationship to a chronic disease process in the upper respiratory tract. It may, however, be exactly analogous to the childhood disease *chronic asthmatic bronchitis*, appearing as a chronic deteriorating condition from the beginning, and often attributable to no obvious cause.

Regardless of its origin or the age of the patient, chronic bronchitis is characterized clinically by a more or less permanent wheezing, with the expiratory phase of respiration greatly prolonged. In pathological studies of this condition, the bronchial submucosa has been observed to be infiltrated with eosinophils and other inflammatory cells, and patches of desquamating mucosa may also be observed. There is usually sputum which is thick, tenacious and difficult to expectorate. This sputum, in addition to acting as further obstruction to expiration, tends to plug small bronchi, bringing about atelectasis and leading to subsequent infection.

In chronic bronchitis the alveoli throughout the lung, except in atelectatic lobules, are chronically hyperinflated. Physiologically there is usually an increase in residual air in relation to total lung volume. Any increased respiratory demand, such as occurs on exertion, produces further hyperinflation. The alveoli become permanently overstretched and the lungs progressively more voluminous and less elastic. With the difficulty in expiration, cough becomes increasingly less effective, and sputum is further retained and inspissated. The final picture is one of bronchial narrowing giving rise to emphysema with ventilatory failure, carbon dioxide retention and right-sided heart failure as consequences.

Treatment of Chronic Bronchitis with Obstructive Emphysema

The distress of patients with chronic bronchitis is often appalling, and the prospect of undertaking the responsibility for ameliorating this distress may be discouraging. Yet a therapeutic regimen that is carefully thought out and vigorously pursued can often bring about excellent results. The primary problem is to improve the patency of the airways; upon some success of this objective all else depends. In the second place the mechanical efficiency of the thoracic cage can be increased in almost every case. Lastly, gas exchange in permanently emphysematous lungs can be improved. In planning a therapeutic program it is probably best to consider these objectives in terms of the kinds of therapeutic means at present available. These can be classified as follows:

1. Liquefaction of sputum with iodides and humidifiers.
2. Bronchodilators.
3. Intermittent positive pressure valves.
4. Antibiotics to control infection.
5. Breathing exercises.
6. Various other specialized techniques.
7. Techniques for preventing respiratory acidosis during acute phases.

From the point of view of the patient's psychic well-being as well as best therapeutic results, the more thorough and detailed the approach to the disease, the better.

Liquefaction of Sputum

A good many factors contribute to the significance of sputum in these cases, including inefficient cough and mucus that is tenacious to begin with and is further dried out by mouth breathing. As a consequence, some kind of aid to expectoration is almost always necessary. Of systemic drugs, the iodides offer, in the authors' opinion, the greatest improvement in sputum fluidity.[10] Probably the best form at present available is the calcium salt. However, fairly large dosage is required for effectiveness—at least 1 to 1.5 gm. daily.

The raising of sputum is usually most difficult in the morning, and some kind of humidification at this time may be a desirable part of the regimen. Steam inhalation is old-fashioned but often effective, and it requires no special equipment. Of aerosol sprays, plain water with glycerol added to reduce surface tension is a very suitable agent. Detergents such as Alevaire® have their advocates and may be tried.[5] The most recent development in this field, aerosolized enzymes such as trypsin and desoxyribonuclease, may be useful in emergencies, but they produce a certain amount of reaction in the bronchial mucous membrane and in studies carried out by the authors, hypersensitivity reactions were frequently noted after a week or two of use.[4]

Bronchodilators

Of the systemic bronchodilators, aminophylline remains useful in some situations, and preparations for oral use that provide slow, prolonged release of the drug are now available. However, epinephrine and related compounds in aerosols seem certainly the most valuable drugs for bronchodilation in most situations.[9] This is because the problem in chronic bronchitis is partly the inflammatory thickening of the bronchial mucosa, and the vasoconstrictor effect of epinephrine aerosols gives them a valuable dual action that other drugs do not have. Also, the systemic toxic effects are reduced by inhalation administration. Among the preparations most frequently used are racemic epinephrine (Vaponephrin®) and isonorepinephrine (Isuprel®). The authors have used the racemic epinephrine most commonly and have not observed any untoward changes in hypertensive or cardiac patients.

Patients with chronic bronchitis should be encouraged to carry a hand nebulizer with them. It should be used not only to counter incipient dyspnea, indicated by a tight feeling across the chest, but it should be used before any unusual exertion, to forestall an attack. Six or eight deep inspirations of nebulized epinephrine at such times is of great value.

The authors do not routinely use epinephrine and related compounds systemically in these patients. Although such compounds may diminish bronchial muscle tone (as distinguished from spasm), the systemic toxic effects commonly outweigh the therapeutic advantage. In some cases, however, oral administration of ephedrine or Propadrine® (phenylpropanolamine) with a barbiturate cover may be of some help.

Intermittent Positive Pressure Therapy

The intermittent positive pressure valve is one of the most significant advances in recent years in the treatment of chronic bronchitis. Designed to apply a controlled pressure in inspiration to the inspired gas, to cycle at the patient's will, and to apply aerosolized medication, it is a major triumph of medical engineering. The effects are obvious: Bronchi are directly dilated, ventilation increased, cough promoted and bronchial mucous membranes medicated more deeply than is possible with other techniques. Patients with severe respiratory crippling have become moderately active by means of such equipment.[6]

Intermittent positive pressure equipment is also invaluable in dealing with or warding off complications. Not the least of its services is the aid it gives to the cough reflex, since the difficulty that patients with chronic bronchitis ordinarily have in coughing up sputum makes even a common cold a potential threat to life. It can be used at regular intervals through the day to forestall the development of carbon dioxide retention, and in acute exacerbations it may be the only means of saving the patient's life.

Various kinds of valves are available, each with its own particular developments. (The authors' experience has been with the Bennett IPPB unit.) Whatever model is preferred, intermittent positive pressure therapy is an important tool in the management of chronic bronchitis. It is an indispensable item in hospitals, and its simplicity and relative inexpensiveness make it feasible in the home of the patient as well as in a physician's office.

Antibiotics in the Control of Infection

In chronic bronchitis subclinical infection is almost always present to a greater or less extent, since the presence of tenacious mucus in the smaller bronchial radicals is hospitable to organisms. The eosinophilic infiltration of bronchial walls suggests hypersensitivity to the bacterial flora normally present in the patient's respiratory tract. For these reasons, the administration of courses of broad-spectrum antibiotics in full dosage is generally accepted procedure. This is of course almost manda-

tory when clinical infection develops. In addition to this intermittent therapy, many physicians use small maintenance doses of sulfonamides to keep down bacterial proliferation.

Aerosolized antibiotics are less in favor than once they were, now that it has been demonstrated that therapeutic concentrations of these drugs in the sputum may be obtained by the oral or parenteral route.[1] The use of these standard routes of administration reduces the incidence of hypersensitivity, and also cuts down on the undesirable overgrowth of insensitive organisms such as monilia in penicillin therapy. Such overgrowth occurs frequently during or after aerosol therapy. Sensitivity to bacteria is difficult to deal with; desensitization with autogenous vaccines is sometimes worth trying, although it is often disappointing.

No comment about the control of infection is complete without mention again of the importance of expectoration of sputum. Mucus forms an excellent culture medium, and the atelectatic lobule behind a mucous plug is very readily infected.[7] So the elimination of tenacious sputum is really almost the first problem in treating an infection.

Breathing Exercises

A patient with emphysema is, unless helped, caught in a vicious cycle. He begins with loss of elasticity in the alveoli and permanent ballooning of the lungs. This in turn lessens the negative intrapleural pressure and results in the bronchi, which are dilated by the negative pressure in the pleural space, becoming even narrower, particularly upon expiration.[2] This is a further impediment to ventilation, resulting in further hyperinflation.

Breathing exercises can alleviate these difficulties. Even the habit of pursing the lips upon expiration, which prevents the collapse of the bronchi by building up a slight back-pressure, is oftentimes helpful. Breathing exercises should be directed to training the patient to exhale slowly, as well as to developing improved diaphragmatic and thoracic cage excursion. The primary object is to improve the efficiency of the expiratory phase. Often there is a surprising degree of subjective improvement after even a brief period, particularly with regard to the expectoration of sputum. Even a patient with an almost rigid chest wall and an immobilized diaphragm may have very gratifying response to simple exercises. Of course the prevention of chest cage deformity in children and adolescents is also a necessary objective when the disease is chronic bronchitis.

Other Therapeutic Measures

Of other measures, the use of antihistaminic agents has proved rather disappointing, except perhaps to control rhinitis that leads to exacerbation of the bronchitis. Corticoids should be reserved for severe cases that are refractory to other forms of therapy, since they introduce problems of habituation, infection and limited therapeutic time. Certain newer preparations may decrease these hazards but studies are not yet complete. Diamox® (acetazoleamide) has been used to reduce chronic respiratory acidosis.[3] In a limited study, the authors found it of some use. The benefit from mechanical aids to diaphragmatic elevation, such as belts or pneumoperitoneum, is controversial; they are probably worth trying in patients who tolerate well the Trendelenberg head-down position.

A good part of the success of any therapeutic approach will depend upon the physician's skill in persuading the patient to adjust his way of life to his disability, and the conscientiousness of the patient in carrying out his necessarily large part in the therapy.

Treatment of Acute Exacerbations

At best an emphysematous patient has difficulty in ventilating adequately. Any further restriction, due to lung infection or any other cause, may result in a rapidly progressing respiratory failure. Such respiratory failure produces two effects—the accumulation of carbon dioxide, and hypoxia. Then efforts to increase ventilation continue until the level of carbon dioxide rises so much as to depress the respiratory center in the medulla. This leaves hypoxia, operating through the chemoreceptors in the great vessels, as the sole stimulus to breathing.

The administration of oxygen by standard methods in this situation will result in the disappearance of cyanosis; but sleepiness, accompanied by increased shallowness of breathing, then develops and coma and death may intervene very quickly. The effect of the oxygen administration is to at least partially restore the oxygen content of the blood, putting the chemoreceptors out of action, without significantly decreasing carbon dioxide. The patient is literally left without any stimulation to respiration.

It is here that intermittent positive pressure breathing is life-saving, since it blows off carbon dioxide besides providing oxygen. Used for periods of up to 20 minutes every hour, it can reverse developing acidosis and maintain a patient until the infection, or whatever else precipitated the attack, is under control. When intermittent positive pressure apparatus is not available, tank respirators, anesthetic machines or the meter mask will be helpful, although by no means so efficient.

DISCUSSION

There is no intention here to minimize the total treatment of the patient with asthma or chronic bronchitis. The problems of allergic reaction, of

psychosomatic factors, of infection or of developmental disease perhaps remain of primary interest to clinicians, since these approaches offer hope of permanent relief, if not cure, of the patient. The object of this communication is to outline the methods necessary for the control of the accompanying emphysema, for maintaining the patient in the best possible state, so far as ventilation is concerned, until the exciting cause of his disorder can be controlled. This limited object is still worth a good deal of thought, for it is very often emphysema, directly or indirectly, that is the cause of major disability or death among patients with these diseases.

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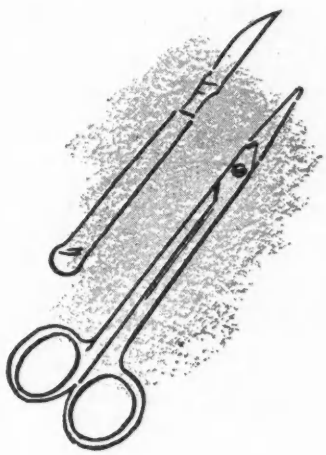

Emotional Factors in Physically Handicapped Children

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• **The staff of the Reiss-Davis Clinic for Child Guidance has been concerned with the emotional factors in physically handicapped or chronically ill children. It is felt by the staff that work with these children must include not only the known procedures to improve or correct their physical condition, but also efforts directed toward preventing or removing any evidence of emotional or psychological crippling.**

The symbolic or unconscious meaning of the disability is of great importance in this work. Attitudes of the parents may seriously interfere with the handicapped child's ability to develop his maximum level of functioning and adjustment. Individual and group psychotherapy was found of value in helping these parents.

FROM THE VERY BEGINNINGS of medicine there has been interest in the problems of persons with physical handicaps, congenital or acquired. In more recent years there has been a growing interest in the emotional and psychological aspects of this problem. At the annual meeting of the American Orthopsychiatric Association last year, there was a panel discussion of the problem of rehabilitation of physically disabled persons, and emphasis was put upon the relationship of all the members of the rehabilitation team, such as physician, psychiatrist, psychologist and social worker. At the Fifth International Mental Health Congress held in Toronto, Canada, in 1954, a morning was devoted to a panel discussion of "The Mental Health Needs of Physically Handicapped Children." The present brief report will attempt to bring attention to some of the important emotional factors as they have been observed in our work with physically handicapped children and their parents at the Reiss-Davis Clinic for Child Guidance.

In the past year the author has engaged in psychiatric diagnostic consultations on children with the following physical handicaps: Congenital club feet, congenital heart defects, coarctation of the aorta, congenital weaknesses of eye muscles, causing various forms of strabismus, cystic fibrosis of the pancreas, severe anomalies of the genitourinary tract, leg shortening and deformity as sequelae of poliomyelitis, severe skin conditions such as generalized psoriasis, lupus erythematosus, alopecia and many forms of eczema; undiagnosed atypical convulsions, and questionable cases of mental retardation.

The patients came to the clinic through the usual channels of referral—from pediatricians, from school physicians, nurses and teachers, from psychiatrists and psychologists in private practice, from other clinics and social work and family service agencies. Some of the patients came without referral, having learned of the clinic from friends or neighbors. The presenting complaints in this group of physically handicapped children included the following: (1) learning problems, such as deficiency in reading or arithmetic although having average or above average intellectual abilities; (2) behavior disorders such as antisocial acts in the classroom or neighborhood, some truancy and some hyperaggressive acts; (3) phobias, including fears of the night, darkness, or animals; (4) severe separation anxieties involving inability to be separated from home or, more specifically, from mother; (5) enuresis, manifested by occasional or nightly bedwetting; (6) passive, withdrawn states with progressive isolation from peers and family; (7) immaturity reactions, characterized by behavior, learning and play of a much younger age level.

As can be seen on the surface these complaints fall into the same general pattern of those of nonphysically handicapped children who are taken to a child guidance clinic. It remains for the diagnostic interviews, psychological tests and, later, actual psychotherapy to reveal in what way the physical handicap has played a role in the child's emotional development and subsequently in the symptom formation. Of interest also is the question of the mother-child relationship and the ways the physical handicap has influenced this relationship. It was into this latter area of mother-child relationship that some of the psychotherapeutic energies were directed, in addition to starting individual psychotherapy for those physically handicapped children for whom it was considered necessary. Some of the pertinent emotional attitudes that were found to be of importance in both of these areas—that is, therapy

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with the mothers and therapy with the children—are here presented.

Betty, 11 years of age, was referred because of increasing difficulty in relating to her schoolmates, a growing complaint of "being different and unable to keep up with the other girls" and a general air of unhappiness. In the history it was noted that Betty had had poliomyelitis at age 6, with the sequela of large muscle group atrophy of one leg, causing shortening and a noticeable limp. Also in the history was a statement that Betty was an only child and that she lived alone with her mother who was divorced from Betty's father. The mother was employed and supported Betty and herself from her wages. However, her employment made it difficult for her to enter Betty's life in school activities or extracurricular events.

Betty's mother had had a period of individual psychotherapy in another agency several years before.

It was decided to start Betty in twice-weekly sessions of psychotherapy. At first all of Betty's verbalizations pointed to the atrophy of her leg, which in her mind was the cause of all her difficulties. She maintained that her limp kept her from playing with the other girls. "They can run faster, walk better and so they get picked on the teams and I am left out all the time." From this there then emerged a series of questions and inquiries devoted to answering, "Why did it have to happen to me?" As the therapist allowed the material to develop further he noted that Betty was becoming involved in revealing her own fantasied reasons for the poliomyelitis and later physical handicap. It became clear that this was understood by Betty as a punishment inflicted on her.

Slowly, in response to questions and comments, Betty revealed that she believed children, especially girls, were punished for daring to masturbate. As this was discussed she felt free enough to begin to reveal some of the content of her masturbation fantasies. Here for the first time she allowed some of her feelings of dissatisfaction with her own genitals to become known. Soon it became clear that much of the complaint of "being different from the others" had its root in her feelings of girls being different from boys, and therefore less capable. The atrophy of the limb and resultant limp were thus seen to have provided her with a good situation onto which she could project these underlying feelings associated with the impairment of ability that she suffered. Shortly, however, it could be demonstrated to her that in spite of her disability she was being accepted by her schoolmates. She was able to compete with them in many ways even though not able to run with the fastest of them. In this way she could see that her own feelings had interfered with the further development of her social relationships.

As a general statement it can be said that there are specific frustrations related to different age groups. Separation from the family and restriction of mobility have great impact on preadolescent children. An adolescent reacts much more to interference with the fulfillment of his interests and the realization of his talents. In Betty's case we have an example of the impact that puberty can have, with its increasing concern in the body, its anatomical changes and its physiological functions. Under the impact of the physiological changes of normal puberty, Betty was again subjected to the psychological conflicts she had in regard to her body. By way of summary, the therapist's understanding of Betty's situation was as follows: Feelings of being different, of inability to compete or keep up with her peers, and general unhappiness with her state were on the surface presented as due to the physical handicap she had. In therapy she revealed that the handicap served her by providing a site onto which she could project deeper underlying emotional conflicts regarding her body and its role. Time is too short to demonstrate other feelings that were also projected onto her handicap. However, once she was freed of these deeper feelings she could make a much better adjustment to the reality of her handicap and accept its limitations on her performances as well as allow herself to develop whatever abilities she could.

Jack, aged 6, was brought to the clinic because he was unable to adjust to any classroom procedure in public schools. He was found untestable by the usual psychological tests administered to determine intelligence and personality structure. His speech was at times incoherent, irrelevant and filled with repetitive phrases or words. He made little or no contact with adults or children, seemed withdrawn and preoccupied with inner fantasies. Quite often he muttered, "Me dead, me dead!" The general impression was one of severe retardation with question of mental deficiency.

As work with him in individual psychotherapy three times a week began, the therapist heard more and more of the theme, "Me dead—you dead—me dead!" This alternated with a playing out in his therapy of violent explosions from without and some explosive reactions that seemed to originate from within his body. Gradually the inner explosive reactions were followed by scenes of death or destruction. However, Jack had formed an attachment to the therapist and was eager to be with her for his treatment sessions.

Jack's mother informed physicians at the clinic that he was scheduled soon to have routine immunization injections, whereupon the suggestion was made that a complete physical examination be done at the same time. When the examination was carried out, severe coarctation of the aorta was noted, with no pulse in one arm and the temperature of the lower limbs 5° F. below normal. An operation to correct the coarctation was scheduled. In the meantime, psychotherapy was continued by

way of preparing the patient for the operation and sustaining him in convalescence. It was learned that owing to his very retarded appearance and behavior, all the possible dire consequences were discussed in his presence in the hospital where he was examined. The period of psychotherapy immediately following this cardiovascular consultation was again filled with the theme of destruction and death. As to the role the disturbed circulation played in the psychological development of the patient, it is conceivable that it not only brought about the changes in body temperature and pulse, but also interfered with the development of a normal body image. It will be of great interest to observe this boy after operation to see what effect improved circulation will have on his general psychological development.

Let us turn now to the work with the parents—more specifically, the mothers—of many of these children with physical defects or handicaps. A few of the mothers are receiving individual psychotherapy, but a larger number of them are in group psychotherapy. Like other investigators who work in this field, the author found the mothers quite often responding with deep feelings of guilt, blame and self-accusation when confronted with a congenital defect, birth injury or chronic illness in their children. These mothers, just as Betty did, posed the question, "Why did it happen to me?" And each in her own way out of the experience of her past, her own cultural influences and attitudes and her own childhood fantasies, supplied herself with an answer to that question.

An interesting reaction on the part of some of the mothers in psychotherapy was an attitude of denial of the existence of the handicap as a physical entity and an insistence that the problem was primarily psychological in nature. The kind of turning away from facing the reality that confronts them is well known in the case of parents who go from one physician to another, to various clinics, institutions, cultists and quacks, constantly seeking support of their wish to evade the situation. Perhaps the wish to consider the handicap or disability as entirely psychogenic was somehow determined by the fact that they were in a psychologically oriented setting at the moment and were reaching out, there, to get a psychological basis for the situation that confronted them. A psychological basis for the symptom would mean a chance for reversing the situation; an organic basis would mean in most instances a hopeless, irreversible process.

Oftentimes the wish to avoid facing the defect in the child stems from the parents' feeling that a defective child reveals some shameful weakness of their own. Many of the mothers spoke of the embarrassed feelings they had whenever they had to be in public with their child, especially if they were to be in a new and strange setting. It was clear that they were concerned with the appearance or behavior of the child being reflected onto them as parents. One mother whose child had a disfiguring skin condition said, "I can't imagine how anyone, especially children, could ignore that skin condition." Because she could not ignore it, or because she had so much feeling invested in it, she was unable to accept that others might regard it differently. Often this attitude was encountered in certain mothers: "My child is so different from other children his age, because of his handicap, that he can never make any kind of adjustment in our society." This overdetermined reaction to the real situation that confronted her naturally interfered seriously with her child's ability to attain whatever potential he had. The contributing elements to this overdetermined reaction were to be found in the mother's own emotional and psychological development, especially in that area that dealt with her earlier awareness and reaction to differences in body, in sexual anatomy, in order of birth within the family, in preferred roles in relationship to one or the other parent. One mother said: "Isn't there always a difference in the way brothers and sisters are treated? Aren't brothers always treated better?"

Quite often a mother was able to recognize that an attitude she now had toward her child with a handicap was a repetition of an attitude she had encountered as a child. One mother who became aware of the fact that she took care of her children only because she considered it her "duty" to do so, suddenly recognized that this was the feeling she had had as a little girl—that her own mother took care of her, not out of love, but only out of a sense of duty. When these mothers were asked how they felt about having the additional care of a child with a handicap, their usual reply was that feelings did not enter into it at all; this was just a responsibility forced upon them and it was their duty to care for the child.

The hostile, punitive feelings of some mothers toward a handicapped child is very lightly disguised. This can be seen at times in the extreme rigidity with which they hold their child to certain prescribed routines, a restricting diet or a painful schedule of medication. Others are able to conceal it in an attitude of leaning over backward to a point of sacrificing their own lives completely, responding to the slightest need or demand of their handicapped child, often to the detriment of other members of the family. Quite often a very concerned, overprotective attitude serves to conceal ex-

tremely hostile and aggressive feelings. The anxiety and overprotectiveness of some of these parents keep the child from ever gaining an awareness of his own capabilities and limits and the child then develops with a shortage of social experiences and must of necessity remain in close attachment to his mother.

The presence of a chronic disease or a congenital defect in a child certainly makes it more difficult for any parent to carry out his parental role. The dependence of all infants and young children is of necessity increased in the case of a physically handicapped infant and young child. This increased dependence quite often provokes in the parents severe feelings of hostility with wishes to be rid of this added burden. This is immediately followed by intense feelings of guilt, and thus a vicious cycle is set in motion. It can readily be seen how this merges into the whole topic of the normal, acute physical illnesses and various needs for surgical operations, such as tonsillectomy. Here, too, the effect that the illness or the operation has on the child and on the parents has been studied and reported in terms of the psychological factors involved.

In the setting of work with these mothers at the clinic, such things as the following are often heard: "Many times I wished that in the next surgical procedure or bout of infectious illness, my child would die." Or, "I didn't think I could take any more of it and found myself wishing he had died or had not been born." It is the feeling of all who do psychotherapy with these mothers that freeing them of guilt for having such feelings and wishes makes easier the task of relating to their child. Also of importance for those who are involved in psychotherapy with physically handicapped children is the matter of countertransference. Too great an identification or too great a sympathizing or empathizing with these children or their parents seriously interferes with the needed objectivity that is so valuable in helping these children to reach their potential level of development.

In conclusion, it can be said that (1) The work with the physically handicapped or chronically ill child must include efforts directed toward preventing or removing any evidence of emotional or psychological crippling. (2) In addition to the real nature of the disability or handicap, its symbolic or unconscious meaning to the child and parent is of great importance. (3) Attitudes and feelings of parents toward these disabilities can seriously interfere with the full development of the potential in these children. (4) Treatment of these children in child guidance clinics is an extension of the fundamental approach in medicine—that is, treat the person and not the disease.

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The Diminutive Kidney

Congenital Hypoplasia and Atrophic Pyelonephritis

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• **Diminutive kidney, hypoplasia or atrophic pyelonephritis, may be the cause of hypertension, lumbar or abdominal pain, obscure gastrointestinal symptoms or chronic urinary infection accompanied by chills and fever. A hypoplastic kidney is prone to infection and stone formation.**

Diagnosis includes meticulous x-ray examination and renal function studies employing the more accurate quantitative phenolsulfonphthalein test of each kidney.

Nephrectomy is the treatment for unilateral disease causing symptoms; localized atrophic pyelonephritis is amenable to partial resection.

Since urinary stasis invites infection, obstructing ureteral strictures should be dilated. Pyelectasis, secondary to ptosis, and ureteropelvic obstruction should be corrected by nephropexy or plastic repair. These conservative measures may prevent renal destruction.

Sixteen patients were subjected to nephrectomy: Six because of persistent pain and chronic infection and ten because of hypertension. The six with pain and chronic urinary infection were relieved. In six of the ten with hypertension, the disease recurred within six months to seven years.

THE DIMINUTIVE KIDNEY—that is, one weighing less than 100 gm.—occurs frequently enough to present a problem of diagnosis and treatment both to general practitioners and urologists. There are several causes: Hypoplasia, in which the kidney is miniature or rudimentary at birth due to arrested development; aplasia, in which there is no true kidney, only remnants of parenchyma and vascular pedicle; pyelonephritic atrophy resulting from infection and obstruction in which atrophy due to nephrofibrosis usually takes place in a kidney of normal size at birth, although it may occur also in a hypoplastic kidney.

Recognition of the condition is important, for it may be the cause of intractable lumbar and abdominal pain, of obscure symptoms that seem referable to the gastrointestinal tract, and of chronic urinary tract infection, sometimes accompanied by chills and fever. It may be the cause of hypertension, particularly in cases in which there is sclerosis of the blood vessels.

The present report is based on review of 53 cases of diminutive kidney treated at St. Mary's Hospital from 1945 to 1955. (Nine cases of solitary congenital kidney in which there was aplasia or agenesis of other kidney were not included in the study.)

Hypoplasia of the Kidney

The hypoplastic kidney is diminutive and rudimentary, consisting of a relatively small amount of parenchyma, pelvis and ureter. As a rule only one kidney is hypoplastic, and since compensatory hypertrophy is present in the other, nephrectomy can be done if necessary for the relief of pain, of chronic urinary infection and, in some cases, hypertension.

It secretes a varying quantity of urine which is collected by normal or bizarre calyces and empties into a hydronephrotic or small bulbous pelvis. Although the urine secreted contains normal constituents, the function of the hypoplastic kidney alone is inadequate to eliminate the waste products of the body should the other kidney be removed, and the patient would die of uremia. In 1913, Geraghty and Plaggemeyer[7] emphasized this point and advised that separate phenolsulfonphthalein function studies be carried out on each kidney. Although the appearance time of the dye may be normal, the hypoplastic kidney usually eliminates one-quarter to one-fifth the amount of that secreted by its hypertrophied mate.

A hypoplastic kidney is prone to infection and stone formation; often scarring with fibrosis, cystic degeneration and round cell infiltration are present (see Figures 1, 2 and 3). Other congenital anomalies of the genitourinary tract frequently are associated with renal hypoplasia. (In two cases in the present series there was reduplication of the opposite kidney.) Hypoplasia is to be differentiated from pyelonephritic atrophy in which the kidney is reduced in size by infection.

Many theories concerning arrested development of the kidney in the embryo have been advanced. The kidney develops from the Wolffian body through the states of pronephros, mesonephros and metanephros. An insufficient blood supply occurring at any of those stages could cause arrest in development (Nicholson,[13] and MacKenzie and Hawthorne[11]).

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Presented before the Section on Urology at the 84th Annual Session of the California Medical Association, San Francisco, May 1-4, 1955.

Figure 1.—Retrograde pyelogram showing left hypoplastic kidney, small bulbous pelvis and absence of lower major calyx.

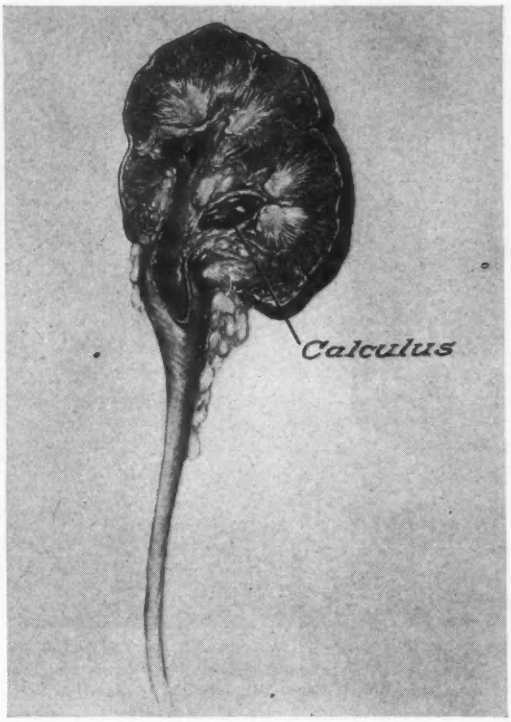

Figure 2.—Saggital section. Diminutive hypoplastic kidney, weighing 22 grams, with stone in middle calyx. Cortical and medullary markings are well defined.

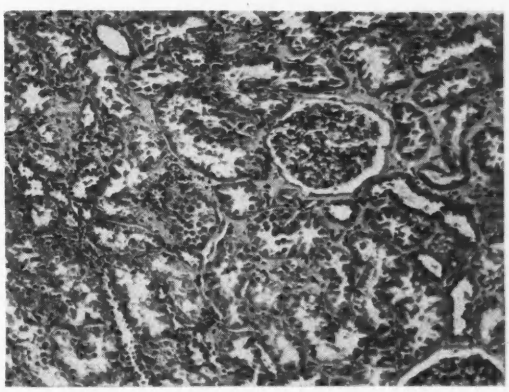

Figure 3.—Photomicrograph of hypoplastic kidney, presenting normal architecture with dilation of tubules and irregular deposits of small calculi. (×100)

Aplasia of the Kidney

In aplasia there is a vestige of parenchymal renal tissue which has never developed any functioning power. The ureter and corresponding half of the trigone are usually absent. Renal agenesis consists of complete absence of the kidney on one or both sides due to entire lack of development of metanephros. In 1933, Gutierrez[8] classified clinical pathologic differentiation of hypoplastic kidney, renal aplasia and congenital absence of one kidney.

Atrophic Pyelonephritis

The diminutive kidney resulting from atrophic pyelonephritis may be bilateral or unilateral. Sometimes diminution is confined to one portion of a kidney. When unilateral, it may be relieved by nephrectomy; when limited to a portion of the kidney it is amenable to partial resection; when bilateral, it results in uremia and death. It can take place in a congenitally hypoplastic kidney but ordinarily occurs in one which was of normal size at birth. Atrophic pyelonephritis is the result of chronic infection, which may ascend from the bladder or be hematogenous in origin. At times it follows surgical intervention on the kidney, such as nephrolithotomy or plastic repair. (Hydronephrotic atrophy and that due to tuberculosis will not be discussed.)

Arteriosclerotic vascular changes are a great factor in producing nephrosclerosis, many resulting from old infarcts. Usually, there is reduction in the size of the kidney; however, the organ may undergo nephrofibrosis without appreciable contraction. The width of the cortex is reduced and the cortical and medullary markings are obliterated. The pyramids

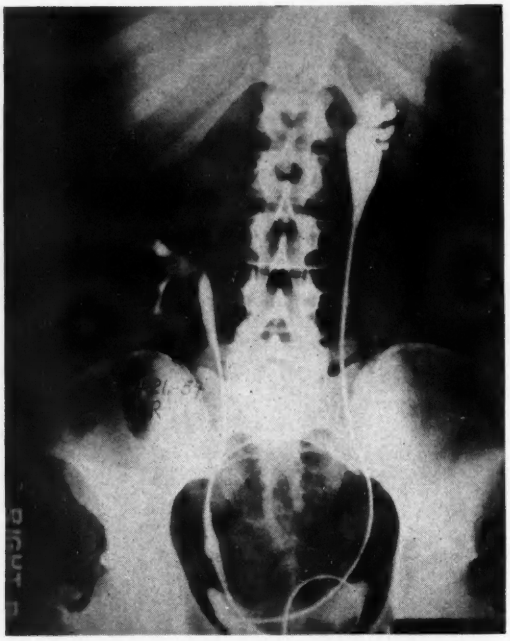

Figure 4.—Retrograde pyelogram showing left atrophic pyelonephritis. Note small size of parenchyma, enlarged pelvis with dilated minor calyces coming directly off the pelvis.

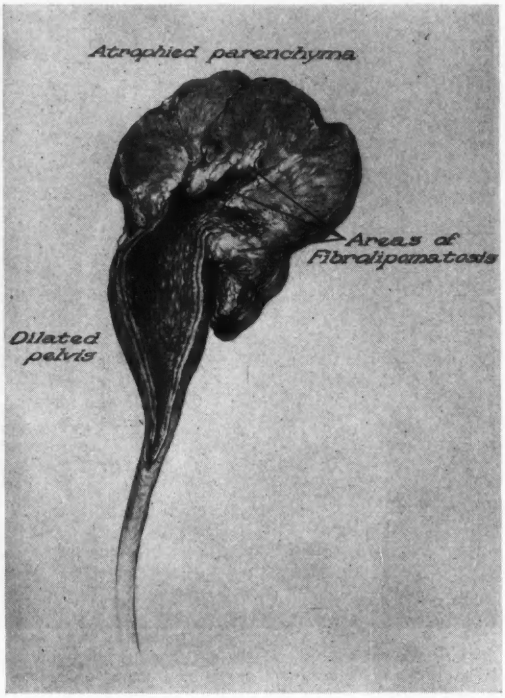

Figure 5.—Saggital section. Atrophic pyelonephritis. Note obliteration of cortical and medullary markings, less defined radial striation and fibrolipomatosis extending inward and compressing the parenchyma.

are white and show less defined radial striation; the pelvis may retain its normal size but usually is enlarged (Figures 4 and 5). The true capsule is white, opaque, thickened and adherent. Often there is infection and stricture formation in the ureter. Upon histologic study, round cell infiltration, hyalinization of the glomeruli, disappearance of the tubules, vascular sclerosis and fibrosis may be observed (Figure 6). Cumming and Schroeder[4] coined the word "nephrofibrosis" to describe this condition.

Bilateral pyelonephritic atrophy may resemble glomerulonephritis with contraction of the kidney, and frequently is associated with hypertensive cardiovascular disease. It may be symptomless until uremia occurs. In eight instances of hypertensive cardiovascular disease in which the patient was moribund at the time of entering the hospital, not until autopsy was nephrosclerosis diagnosed.

Unilateral atrophic pyelonephritis usually results from ascending infection from the bladder. Stasis, due to obstruction and extensive sclerosing perinephritis, is an additional etiologic factor. The condition is associated with and may be the cause of hypertension, particularly when there is sclerosis or aneurysm of the renal vessels. It is fairly often associated with calculous disease and fibrolipomatosis in which the indurated perirenal fat surrounding the pedicle extends inward and compresses the parenchyma. As the kidney atrophies, its mate hypertrophies. Hence nephrectomy is feasible. In a previous report of 113 nephrectomies,[12] nine (8.3 per cent) were for pyelonephritic atrophy, which in five cases was associated with calculi.

In one case, that of a woman 54 years of age with pyelonephritic atrophy owing to chronic infection of the left kidney, it was felt that urinary stasis due to ureteral stricture was a causative factor. Repeated ureteral dilatations, at intervals of six to twelve months aided in combating infection and probably kept the kidney from being entirely destroyed by nephrofibrosis.

Localized Atrophic Pyelonephritis

When diminution in size is limited to one portion of a kidney, infectious changes of the obliterative type usually are confined to one or two calyces. Destruction of a portion of the kidney is characterized by sclerotic narrowing of the infundibulum, which results in dilatation of the calyx (Hyams and Kenyon[10]). The infundibulum may be entirely closed, walling off a chronically infected calyx. This condition has been called calyceal diverticulum or calyceal hydronephrosis. Prather[14] carried out plas-

tic operation for opening the infundibulum. The author believes it is best to perform partial nephrectomy in most instances of localized obliterating pyelonephritis, particularly when there is sclerosis of the nutrient blood vessels.

DIAGNOSIS

In making differential diagnosis of kidney disease, x-ray studies are essential, and a good plain roentgenogram will demonstrate diminutive kidney. The renal shadow is best visualized by carrying out preliminary preparation which consists of giving 45 cc. of castor oil 18 hours before and an enema one hour before the film is taken. This will usually eliminate obscuring contents and/or gas in the gastrointestinal tract.

Excretory urography intensifies the nephrogram. It reveals renal changes of the hypoplastic type, in which the pelvis may be enlarged or bulbous, with minor calyces usually coming directly off the pelvis. It will also distinguish the shrunken kidney due to atrophic pyelonephritis, which is characterized by enlarged pelvis, narrowing and sometimes obliteration of the infundibulum, with distortion and dilatation of the calyces. Retrograde pyelography gives more precise films and is mandatory when kidney function has been decreased. Furthermore, cystoscopy and ureteral catheterization are necessary for accurate quantitative phenolsulfonphthalein test of each kidney. If the foregoing technique is followed, seldom is presacral pneumography necessary to demonstrate the diminutive kidney.

Of interest in this regard is a case reported by Espinosa and Mahoney in which pneumographic observations were interpreted as nonfunctioning hydronephrosis secondary to ureteral obstruction. At operation the condition was found to be renal hypoplasia. The shadow that had been interpreted as enlarged kidney actually was due to fibrolipomatosis.

As Burkland pointed out, it is difficult to differentiate urographically between congenital hypoplastic kidney and atrophic kidney resulting from acquired infection.

In selected cases, particularly those in which hypertension is present, arteriography is indicated to determine the condition of the blood vessels.

TREATMENT

Nephrectomy of the unilateral diminutive kidney is indicated for the relief of hypertension, persistent lumbar and abdominal pain and intractable urinary infection. In 1922, Braasch[2] advocated nephrectomy for atrophic pyelonephritis. In 1952, Cibert and Collenet[3] reported on 31 cases in which nephrectomy was done for aplasia and atrophy. Twenty-six of the patients were relieved of pain, chronic urinary infection, albuminuria and hypertension.

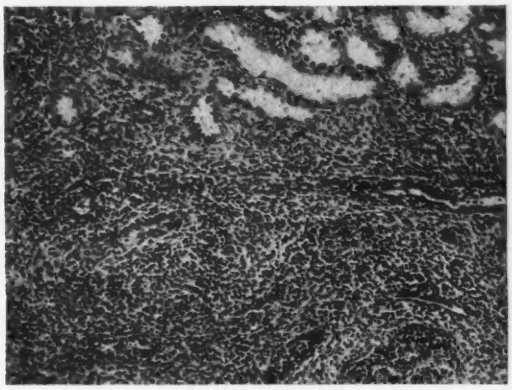

Figure 6.—Photomicrograph showing atrophic pyelonephritis. Note areas of round cell infiltration, hyalinization of the glomeruli, destruction of tubules, vascular sclerosis and fibrosis. (×100)

Of 20 patients in this series with unilateral diminutive kidney, 16 had nephrectomy. Two with hypoplasia and one with unilateral atrophic pyelonephritis were not operated on because they had no symptoms necessitating surgical treatment; and one did not have operation because the risk was considered too great.

Partial nephrectomy may be carried out in certain patients with localized atrophic pyelonephritis. The upper half of a bifid kidney, which often becomes atrophic is particularly amenable to partial resection. In one case in the present series, half of a solitary kidney (the other having been removed previously) was excised because of calculous pyelonephritis and the result was satisfactory.

Relief of stasis aids in eliminating infection of the kidney and may stave off complete destruction. In cases of pyelectasis secondary to ptosis, the kidney affected should be suspended and obstruction of the ureteropelvic junction corrected by plastic repair. Obstructing ureteral stones should be removed and ureteral stricture, often overlooked, periodically dilated. In some cases reduction of hypertension was observed following ureteral dilatation, plastic repair of the kidney pelvis, detorsion and nephropexy.

Atrophic pyelonephritis may follow conservative kidney operations. Meticulous technique, adequate postoperative drainage and correction of accompanying stasis are important to prevention of that development.

ANALYSIS OF CASES

Of the 53 cases of diminutive kidney here reviewed (21 in males and 32 in females) three were

diagnosed in the second decade of life, four in the third, nine in the fourth, seventeen in the fifth, nine in the sixth, nine in the seventh and two in the eighth.

There were ten cases of hypoplasia, ten of unilateral and 33 of bilateral atrophic pyelonephritis (nephrofibrosis). Nephrectomy was done in eight of the patients with renal hypoplasia and in eight with unilateral pyelonephritic atrophy. In ten of the 20 cases the operation was done because of hypertension and in six for the relief of intractable pain or chronic urinary infection. Six of the patients operated upon and four of those who were not, did not have hypertension.

Hypertension recurred in six patients—within one year in two of them, within two years in three others, and in one within seven years. All were over 45 years of age. In two cases in which there was recurrence of hypertension, it was not so severe as before: Systolic blood pressure below 172 mm. of mercury as against 210 mm. in one case and 250 mm. in the other before operation. In the four cases in which there was no return of hypertension so far as is known, the periods of observation after operation were six months, one year, three years, and seven years. Pathologic examination of the extirpated kidneys showed sclerosis of the renal vessels in the majority of cases of hypertension. On the other hand, three patients, aged 33, 45 and 51 years, with advanced sclerosis of the renal artery and its main branches did not have abnormal blood pressure—respectively 120/80 mm., 130/90 mm. and 140/90 mm. of mercury.

Two years should elapse from the time of nephrectomy before a conclusion can be reached as to whether the diminutive kidney, *per se*, was the cause of hypertension. Recurrence is less likely in patients under 45 years of age. In studying pathologic specimens it is difficult to conclude whether pyelonephritic atrophy took place in a congenital hypoplastic kidney or in one of normal size at birth. For this reason, Emmett and co-workers[5] advised the use of the blanket term "atrophic kidney." The author prefers the more precise term "diminutive kidney."

Thirty-three cases of bilateral atrophic pyelonephritis, in which there were varying degrees of nephrofibrosis, sclerosis of the blood vessels and infarct, were reviewed. In many of them the renal symptoms were overshadowed by those of hypertensive cardiovascular disease. Sixteen patients died of nephrofibrosis—12 of them in uremia. Four others died, one of perforated gastric ulcer, one of bronchial pneumonia, one of cerebral accident and one 21 days after transurethral resection of the prostate. Autopsy was done in seven of these cases, and the characteristic inflammatory interstitial changes of nephrofibrosis—that is, round cell infiltration, infarcts, and sclerosis of blood vessels, glomeruli and tubules were observed.

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Systemic Moniliasis

Report of a Case

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THE INTRODUCTION of chemotherapeutic agents and antibiotics has proved to be a mixed blessing. The miraculous cures of formerly fatal diseases as well as of the less spectacular nonfatal but incapacitating diseases, has been accompanied by a significant number of complications, such as all types of allergic reactions, kidney damage, agranulocytosis, the emergence of resistant organisms and—as in the case here reported—the overgrowth of nonsusceptible organisms.

REPORT OF A CASE

A two-year-old white boy was admitted to the Communicable Disease Unit of the Los Angeles County General Hospital on March 10, 1954, with complaint of stiffness of the neck of one day's duration. Headache, lethargy and a fever of 103° F. had been noted on the night prior to admission. The patient had had no other recent illness.

At the time of admittance the temperature was 103° F., the pulse rate 160 and respirations 40 per minute. The patient was well-developed and well-nourished. He was lethargic and irritable. The left tympanic membrane was dull, the posterior pharynx reddened, the neck severely stiff, and reflexes hypoactive but equal.

The cerebrospinal fluid was cloudy and the leukocyte content was 3,400 per cu. mm. (differential not noted). The pressure of spinal fluid was not determined. Gram-positive rods were observed in a specimen of the fluid sediment, and Hemophilus influenza, type B, grew on a culture of the material. The hemoglobin content of the blood was 11 gm. per 100 cc. and the leukocyte content was 3,300 per cu. mm. with 72 per cent neutrophils.

Penicillin was given intravenously (averaging 30 million units per day for four days), chloramphenicol (1.5 gm. per day after 3 gm. on the first day) and sulfisomidine (Elkosin®) intravenously and subcutaneously 6 to 9 gm. per day. General supportive measures were carried out—administration of adrenal cortical extract, sedation and gastric suction. On the fifth day of this therapy the spinal fluid cell content was 40 per cu. mm. with 1 neutrophil. Penicillin and chloramphenicol then were discontinued. On the ninth day, phlebitis and an infection at the site of the intravenous infusions were noted. The leukocyte content was 28,500 per cu. mm. of blood, with 78 per cent neutrophils. The general clinical condition of the patient had remained poor and the possibility of loculation of the meningeal infection was considered. On the twelfth hospital day the cerebrospinal fluid contained 561 cells per cu. mm., 20 per cent neutrophils. This and a continuing elevation of the leukocyte content in the blood seemed to indicate that the infection was not under control, and streptomycin (1 gm. per day) and Alexander's serum* (50 mg. per day for two days) were given. In addition, streptokinase-streptodornase (Veridase®) was instilled intraspinally, 2,500 units three times daily, in an attempt to break up the suspected loculations. On the 13th day a combination of sulfadiazine and sulfamerazine (a total of 6 gm. per day) replaced sulfisomidine because the supply of that drug had been exhausted. On the 15th day chloramphenicol was again started, but it was again discontinued after two days. At about this time, a culture of blood and a culture of material taken from the infected area about the site of venipuncture grew Candida albicans. On the 16th day administration of a saturate solution of potassium iodide was started, beginning with five drops three times daily and increasing so that a maximum of 60 drops three times daily was reached on the 27th day and was maintained until the 42nd day. On the 16th day it was also noted that the cerebrospinal fluid showed 548 cells per cu. mm., 2 of them neutrophils. Also there was a decrease in the sugar content of the fluid. Because of the decreased sugar, it was felt that the phenomena were more than just a reaction to Veridase, and were caused by a growth of organisms. For this reason, sulfadiazine and sulfamerazine were continued. The cell content of the cerebrospinal fluid then decreased and the sugar content returned to normal. The number of leukocytes in the blood also decreased. The sulfa drugs were discontinued on the 22nd day. On the 24th day the patient was found to have several abscesses on the lateral aspect of both thighs. These were surgically opened and cleansed,

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Submitted September 26, 1955.

*Hyper-immune sera for Hemophilus influenzae, type B.

and drains were inserted. Cultures of material from the abscesses grew Candida albicans on two occasions. No organisms grew on further cultures of the blood, but monilia grew on a culture of urine on the 22nd day. Surprisingly, no monilia were recovered from the feces. After the 27th day all cultures were sterile. The patient continued to have a low grade fever intermittently until the 45th day, and thereafter seemed entirely well. In fact, he began to look and act better about a week after the abscesses were drained. The patient continued to do well and was discharged on the 56th hospital day with no demonstrable residual effect.

An x-ray film taken on the 23rd day of illness showed a "haze over the left upper lung field." An electroencephalogram was normal. After the growth of Hemophilus influenza on the first culture of cerebrospinal fluid, all subsequent ones were sterile.

When observed one month after discharge, it was noted that, except for "bronchitis," which had been treated by another physician, the patient was doing very well. His mother had noted a questionable wide gait, but this was apparently not striking.

DISCUSSION

A rising incidence of mycotic infections, both primary and secondary, has been noted. The monilias have been the most common offender and their cultural characteristics have been typical, but growth occurs in a much shorter time than usual. They have been found in increasing numbers in their usual habitat (mouth, throat, sputum, and vagina) as well as in the urinary tract. There appears to be a consistent concomitant in most cases: Usually there was notation that more than one antibiotic had been administered. This may be a contributing factor or it may be merely coincidental with multiple antibiotic treatment, which is the rule in present day therapy. The majority of the disseminated monilia infections have been fatal and monilia lesions have been observed in most of the organs at autopsy.

Sharp,[6] in England, observed in study of a group of 174 pneumonia patients that the proportion of cases in which cultures grew monilia was higher when terramycin was the therapeutic agent than when sulfadiazine was used. Cultures of material from the throat, which were positive for monilia in 16 per cent of cases upon admission were positive in 42 per cent after five days of treatment. The corresponding data for cultures of sputum were 32 per cent and 61 per cent, for rectal cultures were 0 and 59 per cent. None of the patients had symptoms and the incidence of positive cultures decreased when the antibiotic was stopped.

A patient reported upon by Browne[2] was under treatment with succinylsulfathiazole, diodoquin, emetine, and penicillin for amebiasis and liver abscess. He was treated with potassium iodide and gentian violet and recovered. Brown and co-workers[1] reported five fatal cases of fungus infection, in all of which the patient received multiple antibiotics for some type of primary infectious process. In all of the cases except one, cultures of the blood were positive for monilia. The monilia infection was accompanied by disseminated aspergillosis and agranulocytosis after penicillin and chloramphenicol therapy. Huppert[3] reviewed the various theories that have been postulated for the increased incidence of candidiosis as a complication of antibiotic treatment. One theory is that of "suppression with substitution"—that is, that administration of antibiotics upsets the equilibrium of normal flora, permitting resistant species to increase. Another is that the normal flora supply certain nutritional requirements to the host and that disturbance of the normal flora results in a nutritional effect upon the integrity of the mucous membrane, making it penetrable by microorganisms not usually able to pass through it. A third theory is that some antibiotics directly stimulate the growth and increase the virulence of Candida albicans. Other studies have shown that Aureomycin stimulated the *in vitro* growth of Candida albicans significantly, while penicillin, chloramphenicol, streptomycin, and terramycin did not. Huppert and co-workers[3] cited the work of McVay and Sprund in 1951, who showed that cultures of oral, vaginal and rectal material were positive for Candida albicans in 63 per cent of cases after Aureomycin was given, whereas none was positive before. This phenomenon has been observed with most antibiotics administered orally or parenterally.

In the case of Hemophilus influenza meningitis reported herein, many drugs were given, including penicillin, chloramphenicol, sulfadiazine, sulfamerazine, sulfisomidine and streptomycin. The treatment was prolonged because of the apparent relapse of meningitis. The diagnosis of disseminated moniliasis in this patient was confirmed by multiple cultures of materials from various sites (blood, urine and subcutaneous abscess). The patient had no sequelae. The role of potassium iodide must be assessed. Certainly the stopping of antibiotics and drainage of the abscesses contributed to the recovery.

SUMMARY

In a case of Hemophilus influenza (type B) meningitis treated with multiple antibiotics and sulfa drugs, systemic moniliasis developed during antibiotic therapy. The patient recovered after surgical drainage of subcutaneous abscesses, discontinuation of the antibiotics and intensive treatment with a saturated solution of potassium iodide. A portion of the literature on the subject of moniliasis is discussed. The cause of systemic monilia has not been established at this time.

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Nitrofurantoin in Treatment of Coliform Bacteremia

Report of a Case

JOSEPH F. SADUSK, JR., M.D., Oakland

THE USE OF FURADANTIN® (nitrofurantoin, N. N. R.), one of the group of antibacterial nitrofurans, has been established in the treatment of resistant strains of certain gram-positive and gram-negative bacterial infections of the urinary tract. The general literature was reviewed by Trafton and co-workers[9] but the treatment of bacteremia was not included. In a medical research forum at the New York Academy of Medicine, Friedgood and Ripstein[2] briefly mentioned six cases of *B. proteus* septicemia successfully treated with Furadantin but gave no details.

Consequently, reports to date do not deal with bacteremia but rather with infections limited to the urinary tract. The purpose of the present communication is to report in detail the successful treatment of a case of persistent bacteremia due to *E. coli*, the focus of which was presumably the urinary tract, and to discuss the possible relationship of the disease in this case to the administration of adrenocortical hormones. In this particular case, bacteremia was not cleared by administration of streptomycin in combination with certain of the broad spectrum antibiotics.

CASE REPORT

A 63-year old man had sudden onset of a shaking chill and fever, followed shortly by nausea, vomiting and prostration. Chills continued, prostration increased and the patient was admitted to hospital at night, six hours after the onset of symptoms. The patient had had mild dysuria and low backache for two days before the acute illness developed. Upon physical examination the patient was observed to be prostrated and the skin was flushed and dry. The temperature was 101° F., the pulse rate 104 and blood pressure 140/75 mm. of mercury. Severe shaking chills continued and at 1 o'clock in the morning, following an unusually heavy chill, the temperature was 107°F. (This temperature was confirmed.) At that time a specimen of blood was obtained for culture, and 600,000 units of aqueous procaine penicillin then was administered intramuscularly.

The following morning, the temperature was 103.2°F., the pulse rate 112 and blood pressure 74/50 mm. of mercury. The patient was lethargic but could be aroused. The skin was flushed and dry but without eruption or petechiae. Pulses were equal, rapid and regular. Heart sounds were somewhat distant but there were no murmurs. The lungs were clear. The abdomen was flat and no masses were palpated. Slight tenderness was noted in the right upper quadrant.

The urine was turbid with acid reaction, specific gravity of 1.018, a 1 plus reaction for albumin and a trace of sugar. Acetone and diacetic reactions were negative. Upon microscopic examination of centrifuged sediment, a solid field of erythrocytes and 10 to 15 leukocytes per high power field were noted. A few gram-negative rods were seen. There was a heavy growth of *E. coli* on a culture of the urine.

Erythrocytes numbered 4,250,000 per cu. mm. and the hemoglobin content was 13.2 gm. per 100 cc. Leukocytes numbered 7,650 per cu. mm.—40 per cent stab neutrophils, 42 per cent adult neutrophils, 7 per cent lymphocytes, and 1 per cent monocytes. There was pronounced toxic granulation of the neutrophils.

In view of the urinary abnormalities and the relative leukopenia with a pronounced shift to the left, it appeared clear that the patient had bacteremia from a focus probably in the urinary tract. Accordingly, 500 mg. of chlortetracycline was administered intravenously without delay and a similar dose was given six hours later. The hypotension and obvious apathy suggested the possibility of impending shock, perhaps due to adrenal cortical damage, and 40 cc. of adrenal cortical extract was given intravenously over an 8-hour period. Cortisone was begun in a dosage of 200 mg. daily, given by mouth at 6-hour intervals.

Early in the afternoon of the day following admittance, a report was received that gram-negative bacilli grew on a culture of blood. A combination of oxytetracycline and streptomycin was begun in total daily doses of 1.5 gm. and 4.0 gm. respectively, the latter intramuscularly.

While arrangements were being made for the administration of adrenal cortical extract, the blood pressure decreased to 68/50 mm. of mercury. After the administration of 10 cc. of adrenal cortical extract, the pressure rose to 82/50 mm. and by the time of administration of the second 10 cc. dose one hour later, it was 98/56 mm.

Data on the subsequent course are given in Chart 1. Daily blood cultures were obtained, the blood pressure was carefully observed, and leukocyte and differential counts were made daily. The blood pressure rose to 130/78 mm. of mercury the day

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Submitted November 11, 1955.

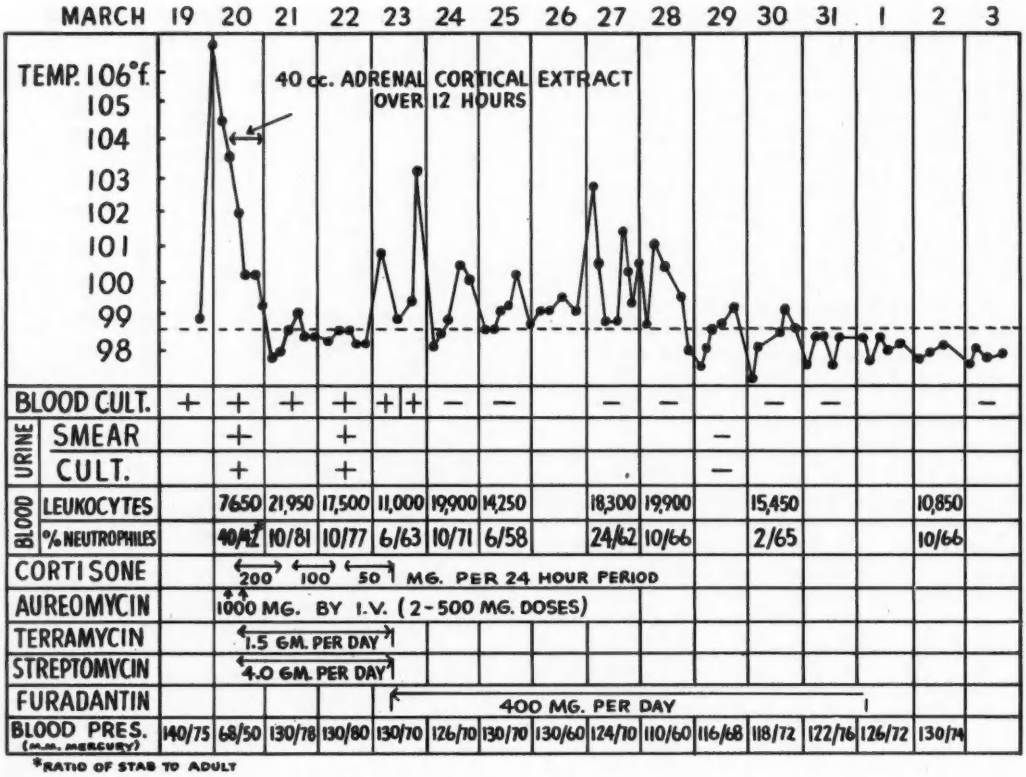

Chart 1. Clinical, laboratory and therapeutic data on a case of *E. coli* bacteremia successfully treated with Furadantin (nitrofurantoin) after unsuccessful use of streptomycin, chlortetracycline (Aureomycin), and oxytetracycline (Terramycin). Note that initiation of Furadantin coincides with cessation of cortisone administration.

after administration of adrenocortical hormones was begun and thereafter did not significantly change (Chart 1). Bacteremia continued—one or two colonies per cc. of blood on the culture. The leukocyte content rapidly rose and the shift to the left decreased. Twenty-four hours after the administration of cortisone was begun, the dosage was reduced to 100 mg. daily, and on the third day to 50 mg. daily. The patient's clinical appearance improved but on the fourth day in the hospital the temperature began to rise even though albumin had disappeared from the urine and only scattered erythrocytes and a few leukocytes were seen in microscopic examination of the sediment. Repeated physical examinations were carried out but a specific focus of infection in the urinary or gastrointestinal tracts could not be identified. No heart murmurs were heard.

With the temperature rise to 100.8° F. on the fourth day and the fact that bacteremia was still present as of the preceding day (Chart 1) a second culture of blood (which subsequently proved to be positive) was made and treatment was changed abruptly. Oxytetracycline and streptomycin were discontinued and Furadantin was administered by mouth, 100 mg. every six hours. Cortisone was also discontinued at the same time.

Following this change in therapy, all blood cultures were sterile and the temperature gradually decreased. On the eighth hospital day the leukocyte content of the blood increased and young forms of neutrophils reappeared. Upon physical examination the left testicle was observed to be enlarged, reddened and very tender. A urological consultant attributed these symptoms to acute epididymitis. Appropriate local treatment led to a regression of the lesion and favorable changes in the leukocyte content and differential.

Cystopyelographic examination was carried out on the tenth hospital day. The anterior urethra was normal. There was slight enlargement of both lateral lobes of the prostate but no enlargement of the middle lobe. Generalized contracture of the neck of the bladder was noted. Sphincter tone was good. The bladder wall showed many coarse trabeculations and openings of three small diverticula were noted. Both ureteral orifices were normal in size, position and appearance. Retrograde pyelograms were made, and no abnormality was observed in the upper urinary tracts, but there was an incompletely filled diver-

ticulum about 3 cm. in greatest diameter extending laterally from the left side of the base of the bladder. A single smaller diverticulum about 1 cm. in diameter was observed at the left side of the fundus. A film made with the patient upright, following withdrawal of the catheters, showed satisfactory drainage of both upper urinary tracts and normal mobility of both kidneys.

In view of the presence of diverticula, catheter drainage of the bladder was begun and was continued throughout the remaining period of hospitalization.

Further roentgenographic studies revealed pulmonary emphysema with old pleuritis of the left base, atherosclerosis of the aorta and (after a double dose of Telepaque®) poorly functioning gallbladder. No abnormality was observed in films of the colon.

Furadantin was discontinued after it had been given nine days with a dosage of 400 mg. daily. Nonprotein-nitrogen content was 28.6 mg. per 100 cc. of blood the day before Furadantin therapy was started. After five days it was 43.0 mg., and at the end of nine days 44.0 mg. per 100 cc. The day following discontinuance of Furadantin it was 39.2 mg. The patient continued to improve and was discharged 14 days after admittance. There was no recurrence of symptoms up to one year after discharge.

Results of disc sensitivity tests carried out on the organism isolated from the first culture of blood were reported by the Peralta Hospital laboratory as follows: Resistant to penicillin, erythromycin, chloramphenicol, chlortetracycline and oxytetracycline; moderately sensitive to streptomycin; highly sensitive to Furadantin. Studies on the same organism carried out in the Bacteriology Laboratory of Stanford University Hospital by the plate-screening method of Rantz[7] revealed the following: Resistant to penicillin, polymixin, erythromycin and bacitracin; sensitive to streptomycin, oxytetracycline-chlortetracycline, chloramphenicol and neomycin. Identification of the organism as *E. coli* was confirmed.

DISCUSSION

The portal of entry of the infecting organism was doubtless the urinary tract, probably the bladder diverticula, in which there was mild cystitis. At no time during the course of the illness was there any evidence of acute prostatitis or prostatic abscess. Epididymitis may have occurred only as a complicating factor during convalescence. Likewise there was no evidence of significant abnormality of the gastrointestinal tract.

The success obtained with Furadantin in clearing the bacteremia is quite clear, since blood cultures taken up to and through the afternoon of the day Furadantin therapy was begun were positive. Within 18 hours after administration of Furadantin, the blood culture became sterile, as did subsequent cultures. (Cortisone was discontinued at the same time, a factor to be taken up later in this discussion.) It is likewise evident that streptomycin, chlortetracycline, and oxytetracycline failed to clear the blood stream, although there was an apparent clinical improvement for several days after these agents were used. The combination of streptomycin and oxytetracycline cannot be considered to be an antagonistic combination, since the simultaneous use of streptomycin and tetracyclines is recognized as clinically proper for the treatment of resistant infections due to certain gram-negative bacilli[8] and, in some instances, not theoretically improper.[4]

The mechanism of clearing the blood stream is of interest, since in this case the focus of infection was probably cleared by Furadantin with a resultant cessation of further seeding of the blood stream. It is reasonable to suppose that the concentration of Furadantin in the blood stream was not sufficient to act directly upon circulating organisms as do other generally more bactericidally potent agents.

The discrepancy between the two methods—the commercial disc method and the plate-screening method—of sensitivity testing for the strain of *E. coli* is worthy of note and points up the fact that these *in vitro* tests do not necessarily always parallel clinical response. They must be looked upon as useful in the way of general guidance but should never supplement clinical judgment and careful clinical observations made during the course of therapy.

The shock-like syndrome observed in this patient, with evidence of pronounced hypotension and apathy, is occasionally seen in cases of severe and overwhelming bacteremia. Whether, in the present patient, this was due to peripheral vascular collapse presumably due to bacterial toxins,[1] or to adrenal cortical damage as classically demonstrated in the Waterhouse-Friderichsen syndrome, or to some unknown kind of inhibition of the adrenal cortex, is not clear. Certainly, the use of adrenal cortical extract promptly raised the blood pressure, which then continued at a satisfactory level with the follow-up administration of cortisone. A similarly beneficial response was observed by the author in another case of overwhelming bacteremia with *E. coli*, treated in the same manner, in which the patient's condition was critical prior to adrenocortical hormone and antibiotic therapy.

The fact that two changes were made in treatment at the time bacteremia was cleared—namely, the institution of Furadantin by mouth and the discontinuing of cortisone—raises a question. While it seems clear that the use of Furadantin was the principal and important change, the possibility that cortisone may have played a role in the failure of the broad spectrum antibiotics must be considered. It is well known that the use of adrenocortical hormones may lead to the development of high levels of bacteremia[6]; however, it is likewise clinically known that the use of appropriate antibiotic agents will prevent such complications. Furthermore, Germuth, Ottinger, and Oyama[3] have brought out the fact that such increased bacteremia is due not to a result of interference with the clearing mechanism but rather to the enhanced multiplication or entry from the infected tissues.

Jawetz[5] has gone one step further and has studied the effect of Cortisone on the therapeutic efficacy of antibiotics in experimental infections. His data show that cortisone may interfere with the therapeutic effectiveness of antibiotics, the magnitude of the effect depending upon the severity of infection and the dosage of the antibiotic. However, in his studies the reduction of the therapeutic effectiveness of the antibiotic by cortisone was not evident when the antibiotic agent was given in large excess beyond the curative dose. Consequently, it is clear that cortisone usually plays little role in clinical medicine if the dosage of the antimicrobial agent is well in excess of the minimal curative dose.

Unless the strain of *E. coli* in the present case was an organism unusually resistant to the certain broad spectrum antibiotics employed, the therapeutic superiority of Furadantin in this case is supported.

SUMMARY

Bacteremia due to *E. coli* disappeared with the administration of Furadantin after failure with streptomycin, chlortetracycline, and oxytetracycline therapy. It was considered that Furadantin did not clear the blood stream *per se*, but rather cleared the focus of infection.

A shock-like syndrome due to the bacteremia was controlled by the use of adrenal cortical extract and cortisone. The possible inhibitory effects of the adrenocortical hormones on the broad spectrum antibiotics is discussed, and it should be pointed out that improvement coincided with the simultaneous cessation of their use and the administration of Furadantin.

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Presumptive Herpes Zoster Meningoencephalitis

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HERPES MENINGITIS in the differential diagnosis of poliomyelitis is unusual. That is why the following case is being reported. During a busy admitting night at the Communicable Disease Unit of the Los Angeles County General Hospital many patients are admitted with a diagnosis of acute anterior poliomyelitis, then are found to have an entirely different and unsuspected disease. Several of the more common are various types of bacterial meningitis, mumps meningoencephalitis, influenza syndrome and, more rarely, spinal coccidioidomycosis, infectious neuronitis or Guillain-Barré syndrome, and brain or cord tumor.

It is not generally known that the herpes zoster virus can also cause symptoms similar to those of acute poliomyelitis. In 1947 McCormack[1] reported a case in a four-year-old girl with complete recovery. Nachman[2] added three more cases to the pediatric literature in 1951. In those cases also there was complete recovery. Terterka and co-workers[3] reported 44 cases of paralysis accompanying herpes in adults and only seven of the patients recovered completely. The benign course of the disease in a 19-year-old girl, the subject of this report, coincided with the course of the disease reported in the pediatric literature.

REPORT OF A CASE

A 19-year-old girl of Jewish parentage was admitted with complaint of dull prefrontal headache for five days. When pain in the neck, stiffness of the back and nausea developed, she was referred to the Communicable Disease Hospital with suspicion of poliomyelitis. On physical examination she appeared acutely but not severely ill. The temperature was 99° F., the pulse rate 74, respirations 20 per minute and blood pressure 120/80 mm. of mercury. The skin was clear except for one tiny vesicle on an erythematous base on the left flank. No abnormalities were observed in the head, eyes, ears, or throat. The neck and back were moderately stiff. The chest was clear. The heart was normal. The abdomen was soft and there were no palpable abnormalities. Hamstring spasm was not present.

On neurological examination there were no bulbar signs or reflex changes. No muscular weakness was noted.

Results of examination of the blood and urine were within normal limits. The cerebrospinal fluid was ground glass in appearance; and on microscopic examination showed 339 cells per high power field — 95 per cent lymphocytes. The spinal fluid pressure was 170 mm. of water and the fluid flowed freely. The Pandy test reaction was 1 plus, and the sugar content normal.

From the Service of Dr. A. G. Bower, Chief Physician, Communicable Disease Unit, Los Angeles County General Hospital.

The presumptive admitting diagnosis was nonparalytic poliomyelitis. The patient continued to complain of headache and of an irritating pain in the left abdominal wall. During the next 48 hours, several patches of small vesicles appeared along the course of the twelfth dorsal nerve. Three days after admission the cerebrospinal fluid was again examined and showed 96 cells per high power field, chiefly lymphocytes. There was a positive Pandy reaction and normal sugar content. It was the consensus of the senior consultant and the attending staff that the diagnosis was herpes zoster meningoencephalitis. The symptoms cleared completely within a week and the patient was discharged. An electroencephalogram, x-ray film of the chest, results of tuberculin and coccidioidin skin tests, and of two mumps complement fixation tests taken a week apart, all were normal. Muscle examination by the physiotherapy department at the time of discharge showed no abnormalities. There was no history of exposure to the herpes virus at any time.

SUMMARY

A case of meningoencephalitis accompanied by herpes zoster, which is thought to be the etiologic agent, in a 19-year-old girl is reported. The patient completely recovered.

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EDITORIAL

Cancer Detection: The Present Status

THE INCREASING PREVALENCE of cancer continues to be a source of grave concern to all physicians. As infectious and metabolic diseases become better controlled, and as nutrition and housing improve, the life span of citizens keeps increasing, and a higher proportion of citizens are living to the ages when cancer is common. The annual case *incidence* rate is about 40 per 100,000 at age 25, 475 per 100,000 at age 50, and 1,900 per 100,000 at age 75. The trends for cancer *prevalence* and *mortality* are very similar to the incidence.[1] At the same time, it must be remembered that while cancer is a grave disease of tremendous emotional impact, yet as a source of human misery it is probably far exceeded by mental disorders, articular diseases and cardiovascular conditions. In this perspective the following paragraphs may be considered.

The reported cancer incidence rate in 1947 was 319 per 100,000 population (or 30 per cent higher than in 1937). More than half a million new cases of cancer are now being diagnosed in the United States each year and this number is likely to increase to more than 750,000 by 1975. Improved methods of detection, better trained physicians, economic prosperity and increasing average age of population all contribute to the increasing recognition of the disease.

Much cancer is still first detectable at a stage when cure is improbable if not impossible. However, approximately one-half of cancers occur in the so-called accessible sites—the skin, lip and oral cavity, breast, cervix and rectum. The case for cancer detection procedures is based on the premise that periodic physical examination of asymptomatic persons will uncover localized but unrecognized cancer of these sites in such numbers as to be rewarding, and commensurate with the time, energy and cost involved.[2] This objective could be reached only if there is an informed population which will persist in being screened year after year. It is obvious that only a minor fraction of the population will interest itself in such a regular program for their life span after age 45. Therefore, the contribution of this program, even if launched on a mass scale, would effect only a fractional improvement in the total problem. For this reason, valiant efforts to discover a short-cut to cancer detection continue to be made—for example, a test which might not need more than cursory cooperation by the asymptomatic individual.

How may cancer be mass-detected at a time when cure is probable? Available screening methods include (a) biochemical tests, (b) cytologic tests, and (c) roentgenologic methods. Extensive work has been conducted in various parts of the country with biochemical tests for cancer but, as may be read elsewhere in this issue, without achieving a reliable test to date.[3] Cytologic methods offer some promise. Many reports are available to illustrate the value of cytologic tests in individual office practice, where the results of the test, either positive or negative, are weighed in the light of the associated physical findings and history of the patient—and, incidentally, where the patient is likely to be motivated to follow promptly the physician's advice in the event of an unexpected tumor being found. However, when cytology is applied as a mass screening procedure, the number of false positives and false negatives has been a source of considerable unhappiness and not a little morbidity. Work is currently in progress using automatic devices for scanning smears obtained from various body orifices, notably the cervix, but their true usefulness in the detection of curable cancer remains to be shown. Roentgenologic methods are obviously not of much value for accessible site cancers; for cancers of the inaccessible sites, notably stomach, lung and abdominal viscera, they have some, but unfortunately rather limited, value. In other words, by the time a given cancer is large enough to cast a clear shadow on

the average *screening* roentgenogram or photofluorogram (whether that cancer be of lung, stomach or elsewhere) it usually has to have an average diameter of about 2 cm. An average epithelial cancer of such size contains about 260,000,000 cancer cells, and all too often some of these cells have already metastasized via vascular or lymphatic channels. Detection in such cases may be no longer "early" or life saving.

What is the value of periodic physical examination? A rather extensive trial of cancer detection centers was sponsored in California a few years ago.[4] The centers were conducted in four different communities during a period of three years. It proved impossible to limit examinations to apparently asymptomatic persons. It also proved impossible to maintain the interest of competent examiners and nurses. This is readily understandable when, for example, the yield of cancer of the cervix in women over 30 is only about 30 per 100,000 per annum, and the yield of rectal cancer about 20 per 100,000 adults per year. After studying the results, the Cancer Commission of the California Medical Association concluded that a more practical and widespread approach to the problem of earlier tumor detection would be emphasis on making "every physician's office a detection center," stressing the annual physical examination of persons over 45 years of age, especially for tumors in the five common accessible sites. These are the tumors most readily curable today; frequently they can be detected by a simple physical examination.

The results of such a program were studied by Dr. C. P. McCullough and his colleagues in one county of California in 1952-53.[5] Several physicians in that county made an annual "cancer detection examination" available to those adults who wished to have it. The yield in cancers was recorded and the program did appear to be as effective as any other cancer detection program yet reported.

The commonest organ site of cancer is the female breast. To aid in the earlier detection of small, potentially curable breast tumors, many physicians recommend periodic self-examination of the breast, especially by women past the age of 45. Women are advised to examine the breast following each menstrual period, or, after the menopause, on a certain date such as the first of each month. Providing this program does not induce an undesirable degree of cancerphobia or hypochondriasis, it is believed that it will be effective in bringing a significant number of curable breast tumors to medical attention at an earlier phase than has been the case in the past.

Cancer of the lung is becoming an increasingly common tumor in males, following closely the incidence of cancers of the stomach and colon. It was hoped at one time that routine chest roentgenography would disclose these tumors at a curable stage. Judging by the work of Boucot and others,[6] periodic x-ray examination of males past the age of 50 has resulted in disclosing about 50 bronchogenic carcinomas per 100,000 males examined per annum. Unfortunately, the three-year survival rates of men operated on for removal of these apparently early-detected carcinomas are on the average only 11 per cent. In other words, roentgen screening discovers tumors which all too often have already metastasized. With more radical thoracic operations, this salvage rate will be increased, but a more refined screening method is still needed for this disease.

Annual proctoscopic examinations have been recommended for persons over 45 years of age. No extensive data have yet been published as to the results obtained. A small but significant proportion of rectal polyps are pre-carcinomatous and this method should undoubtedly aid in disclosing more curable rectosigmoid cancers than are discovered at present.

One of the very practical problems in cancer control remains the fact that the detection of small asymptomatic growths in an otherwise apparently healthy person is not always followed by prompt action; many citizens are reluctant to part with what they regard as vital organs when they feel quite well. Delay often vitiates the value of detection. Despite these difficulties, it is believed that periodic simple physical examination of asymptomatic persons can be of distinct value as an adjunct phase of our cancer control program. Such examinations are best conducted by interested physicians as part of office practice. County medical society units perhaps could assist the public by maintaining rosters of qualified interested physicians able and willing to perform such annual examinations. Until that happy day arrives when cancer can be prevented, wide application of this periodic physical examination in persons over the age of 45, coupled with prompt effective treatment, should produce a decrease of about 15 per cent in cancer mortality over and above that currently achieved.

L. HENRY GARLAND, M.D.

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NOTICES & REPORTS

Executive Committee Minutes

Tentative Draft: Minutes of the 254th Meeting of the Executive Committee, San Francisco, Sir Francis Drake Hotel, December 14, 1955.

The meeting was called to order by Chairman Heron in the Tamalpais Room of the Sir Francis Drake Hotel, San Francisco, at 4:00 p.m., Wednesday, December 14, 1955.

Roll Call:

Present were President Shipman, Council Chairman Lum, Auditing Committee Chairman Heron, Secretary Daniels and Editor Wilbur. Absent for cause were President-Elect Charnock and Speaker Doyle.

A quorum present and acting.

Present by invitation were Messrs. Hunton, Clancy, Thomas and Gillette of C.M.A. staff; legal counsel Hassard; health insurance consultant Waterson and Messrs. Robert Tracy and John Kelly of the Cornell Automotive Crash Injury Research.

1. *Membership:*

(a) On motion duly made and seconded, 23 members whose 1955 dues had been received since the last Council meeting were voted reinstatement as active members.

(b) On motion duly made and seconded in each instance, four applicants were voted Associate Membership. These were: J. E. Mannion, Walter Rapaport, and Bert S. Thomas, Sacramento County; Zane Miller, San Luis Obispo County.

(c) On motion duly made and seconded in each instance, reductions of dues were voted for six applicants because of illness or postgraduate study.

2. *Medical Assistants:*

The committee reviewed the request discussed at the preceding Council meeting for appointment of an advisory committee to the California Medical Assistants Association. On motion duly made and seconded it was voted to appoint H. Clifford Loos as chairman of such committee and Doctors E. E. Wadsworth, Jr., of Alhambra and H. C. Moffitt, Jr. of San Francisco as members of this committee.

3. *California Society for Internal Medicine:*

A communication from the California Society for Internal Medicine, requesting advice on the desirability of requiring county or state medical association membership as a prerequisite for membership in that society, was reviewed and given to legal counsel for reply.

4. *California State Board of Health:*

Discussion was held on possible nominees to fill one present and two impending vacancies on the California State Board of Health. On motion duly made and seconded, it was voted to propose Doctors A. A. Morrison, Lowell Rantz, Dave Dozier and George C. Griffith for such appointments.

5. *1956 Dues:*

Mr. Hunton presented, for the information of the committee, a letter from a component county society, which had adopted a resolution opposing the 1956 dues of $50 because they included an appropriation to the American Medical Education Foundation. Members of the society had expressed their opinion that such contributions should be on an individual and voluntary basis.

SIDNEY J. SHIPMAN, M.D. . . . . President
DONALD A. CHARNOCK, M.D. . . . President-Elect
JAMES C. DOYLE, M.D. . . . . Speaker
PAUL D. FOSTER, M.D. . . . . Vice-Speaker
DONALD D. LUM, M.D. . . . . Council Chairman
ALBERT C. DANIELS, M.D. . . . . Secretary-Treasurer
IVAN C. HERON, M.D. . Chairman, Executive Committee
DWIGHT L. WILBUR, M.D. . . . . Editor
JOHN HUNTON . . . . . Executive Secretary
General Office, 450 Sutter Street, San Francisco 8
ED CLANCY . . . . . Director of Public Relations
Southern California Office:
417 South Hill Street, Los Angeles 13 • Phone MAdison 6-0683

6. *Poliomyelitis Information:*

Doctor Wilbur presented an article on poliomyelitis treatment prepared and submitted by the medical director of the National Foundation for Infantile Paralysis and sought an opinion on whether or not it should be published in CALIFORNIA MEDICINE. On motion duly made and seconded, it was voted to leave such publication to the discretion of the editor.

7. *Cornell Automotive Crash Injury Research:*

Messrs. Robert Tracy and John Kelly described the survey being made by Cornell University Medical School on automotive crash injuries and sought approval of the C.M.A. for this study to be carried on in selected areas of California. On motion duly made and seconded, it was voted to endorse this project and to cooperate as liaison between the surveyors and the county medical societies.

8. *State Department of Education:*

A request from Doctor Ulrich A. Fritschi that he be relieved of his membership on the Advisory Committee to the State Department of Education was presented. On motion duly made and seconded, it was voted to suggest that Doctor Edmund E. Simpson of Sacramento be recommended for appointment to this committee and that Doctor Fritschi be thanked for his past services.

9. *Committee on Scientific Work:*

(a) At the suggestion of the Committee on Scientific Work and on motion duly made and seconded, it was voted to present to guest speakers at Annual Sessions an honorarium of $50 daily for the days required to make their guest appearances, in addition to the usual allowances of transportation and maintenance of guest speakers and their wives.

(b) Discussion was held on the possible advantages of advance registration at Annual Sessions. It was pointed out that about one-third of the physicians attending these sessions already enjoy advance registration advantages. Mr. Hunton was instructed to look into possible advantages or disadvantages of employing this system.

10. *Public Relations:*

Mr. Clancy reported on several current events in the public relations program and presented a sketch of the exhibit proposed for the Cavalcade of Health of the Los Angeles County Medical Association. On motion duly made and seconded, and in line with the Council's decision at its last meeting, it was voted to allow up to $2,500 for the preparation and maintenance of this exhibit.

11. *Veterans' Medical Care:*

Mr. Hassard discussed a recent communication from the chief medical director of the Veterans Administration which proposed that the "home-town" medical care program for service-connected disabilities of veterans be dispensed with in favor of a direct handling of such cases by the VA. On motion duly made and seconded, the following resolution was approved:

Resolution Adopted by C.M.A. Executive Committee December 14, 1955

WHEREAS, there are 1,832,000 veterans living in California; and

WHEREAS, there are 318,000 treatments per year rendered to veterans by private physicians for their service-connected disabilities under the California Physicians' Service-Veterans Administration Home Town Care Program; and

WHEREAS, the cost to the government is less through the treatment of service-connected veterans by Home Town Physicians than through maintenance of clinic centers for this purpose; and

WHEREAS, the veteran receives prompt and effective treatment through his family Home Town Care Physician, eliminating the added travel cost to the government for treatment at clinic centers; and

WHEREAS, if it is the intent of the government to continue to supply the veteran with treatment for his service-connected disabilities, the C.P.S.-V.A. Home Town Care Program is essential in California; and

WHEREAS, if the C.P.S.-V.A. Home Town Care Program is discontinued in California the veterans may no longer have the services of their family physician available to them; and

WHEREAS, the California Physicians' Service is an integral part of the California Medical Association, the effective cooperation of the medical profession can best be maintained

Proposed Constitutional Amendment

(First Publication)

The following proposal was introduced at the 1955 Annual Session of the California Medical Association. It is to be acted upon at the 1956 session:

WHEREAS, a new corporation has been established called PHYSICIANS' BENEVOLENCE FUND, INC., to administer the duties under Section 6 of Article IV of the Constitution of the California Medical Association; now, therefore, be it

***Resolved:* That Section 6 of Article IV of the Constitution which now reads:**

"At least $1.00 out of the annual dues paid by each active member of the Association shall be allocated to the Physicians' Benevolence Fund and shall only be used for the purposes as set forth in the By-Laws."

is hereby amended to read as follows:

"At least $1.00 out of the annual dues paid by each active member of the Association shall be allocated to the Physicians' Benevolence Fund, Inc., a corporation, and shall be used for the purposes as set forth in that corporation's Articles and By-Laws."

through the continued use of the California Physicians' Service; now, therefore, be it

Resolved: That the veteran should not be deprived of the high standard of medical care conveniently available to him by discontinuing the cooperative arrangement that has made this program extremely successful continuously since 1946; and be it further

Resolved: That the Veterans Administration be urged to extend the C.P.S.-V.A. Home Town Care Program to include all veterans with service-connected disabilities, rather than to eliminate such program.

12. *Medical Review and Advisory Board:*

Mr. Waterson and Mr. Hassard discussed a proposal that defense attorneys handling professional liability cases should establish an organization of their own and pointed out that the initial meeting of such a group would require modest financing to cover the expense of not more than 25 attorneys. On motion duly made and seconded, it was voted to recommend to the Council that such expenses be authorized when and if such a meeting is arranged.

13. *Rollen Waterson Associates:*

Mr. Waterson presented a budget to cover his anticipated services during January, 1956 ($1,500 for a retainer and $200 for travel and miscellaneous expenses) which, on motion duly made and seconded, was approved.

Adjournment:

There being no further business to come before it, the meeting was adjourned at 8:30 p.m.

IVAN C. HERON, M.D., *Chairman*
ALBERT C. DANIELS, M.D., *Secretary*

In Memoriam

BARNETT, GEORGE D. Died in Stanford, December 9, 1955, aged 71, of myocardial infarction. Graduate of Stanford University School of Medicine, Stanford University-San Francisco, 1913. Licensed in California in 1913. Doctor Barnett was a member of the Santa Clara County Medical Society.

✤

BELT, LEROY LORIN. Died in Spring Valley, September 23, 1955, aged 63, of coronary thrombosis. Graduate of Western Reserve University School of Medicine, Cleveland, Ohio, 1916. Licensed in California in 1952. Doctor Belt was a member of the San Diego County Medical Society.

✤

BERTOLA, MARIANA. Died in San Francisco, December 7, 1955, aged 87. Graduate of Cooper Medical College, San Francisco, 1899. Licensed in California in 1899. Doctor Bertola was a retired member of the San Francisco Medical Society, the California Medical Association, and an associate member of the American Medical Association.

✤

BROWN, JOHN MACKENZIE. Died in Los Angeles, December 31, 1955, aged 77. Graduate of the University of Western Ontario Faculty of Medicine, London, Ontario, Canada, 1899. Licensed in California in 1899. Doctor Brown was a member of the Los Angeles County Medical Association, a life member of the California Medical Association and an associate member of the American Medical Association.

✤

GRAVES, REX VALE. Died December 3, 1955, aged 77. Graduate of State University of Iowa College of Homeopathic Medicine, Iowa City, 1903. Licensed in California in 1919. Doctor Graves was a member of the Orange County Medical Association, a life member of the California Medical Association, and an associate member of the American Medical Association.

✤

MACMILLAN, HUGH ALLEN. Died in Long Beach, December 10, 1955, aged 73. Graduate of the College of Physicians and Surgeons of Baltimore, Maryland, 1910. Licensed in California in 1922. Doctor MacMillan was a member of the Los Angeles County Medical Association.

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MILLER, AUSTIN V. Died in San Francisco, December 31, 1955, aged 79, of cerebral hemorrhage. Graduate of Cooper Medical College, San Francisco, 1899. Licensed in California in 1899. Doctor Miller was a member of the Tulare County Medical Society.

✤

MOUL, CHARLES T. Died in San Francisco, December 19, 1955, aged 66, of congestive heart failure. Graduate of Stanford University School of Medicine, Stanford University-San Francisco, 1916. Licensed in California in 1918. Doctor Moul was a member of the Alameda-Contra Costa Medical Association.

✤

RAGAN, STEPHEN T. Died December 9, 1955, aged 67. Graduate of University Medical College of Kansas City, Missouri, 1911. Licensed in California in 1930. Doctor Ragan was a member of the Los Angeles County Medical Association.

✤

SEIBERTH, JACOB. Died in Visalia, December 19, 1955, aged 82. Graduate of the Medical College of Indiana, Indianapolis, 1904. Licensed in California in 1925. Doctor Seiberth was a member of the Tulare County Medical Society.

APPLICATION FOR HOUSING ACCOMMODATIONS

FOR YOUR CONVENIENCE in making hotel reservations for the coming meeting of the **California Medical Association,** April 29–May 2, 1956, Los Angeles, hotels and their rates are at the right. Use the form at the bottom of this page, indicating your first and second choice. Because of the limited number of single rooms available, you will stand a much better chance of securing accommodations of your choice if your request calls for rooms to be occupied by two or more persons. **All requests for reservations must give definite date and hour of arrival as well as definite date and approximate hour of departure; also names and addresses of all occupants of hotel rooms must be included.**

ALL RESERVATIONS MUST BE RECEIVED BEFORE: APRIL 1, 1956

Eighty-fifth Annual Session
CALIFORNIA MEDICAL ASSOCIATION
Los Angeles, California
APRIL 29—MAY 2, 1956

HOTEL ROOM RATES*

	Single	Double	Twin Beds	Suites
AMBASSADOR HOTEL				
3400 Wilshire Boulevard				
Main Building	9.00-17.00		12.00-20.00	28.00-36.00
Garden Studios	15.00-21.00		22.00-26.00	38.00-48.00
CHAPMAN PARK HOTEL				
3405 Wilshire Boulevard			12.00	20.00-25.00
THE GAYLORD HOTEL				
3355 Wilshire Boulevard	7.00-9.00	9.50-11.50	9.50-11.00	22.00-27.00
HOTEL CHANCELLOR				
3191 West Seventh Street	6.00-8.00	9.00-10.00	10.00-12.00	17.00-22.00
MAYAN HOTEL				
3049 West Eighth Street	4.50-6.00	5.00-7.00	7.50-10.00	

***The above quoted rates are existing rates but are subject to any change which may be made in the future.**

CALIFORNIA MEDICAL ASSOCIATION
450 Sutter Street—Room 2000
San Francisco 8, California

Please reserve the following accommodations for the 85th Annual Session of the California Medical Association, in Los Angeles, April 29-May 2, 1956.

Single Room $..... Double Bedded Room $..... Twin Bedded Room $.....

Small Suite $..... Large Suite $..... Other Type of Room $.....

First Choice Hotel..... Second Choice Hotel.....

ARRIVING AT HOTEL (date).....Hour:.....A.M.....P.M. } Hotel reservations will be held until
Leaving (date).....Hour:.....A.M.....P.M. } 6:00 P.M., unless otherwise notified

THE NAME OF EACH HOTEL GUEST MUST BE LISTED. Therefore, please include the names of both persons for each double room or twin bedded room requested. Names and addresses of all persons for whom you are requesting reservations and who will occupy the rooms asked for:

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Individual Requesting Reservations—Please print or type Delegate?..... Alternate?.....

Name..... County.....

Address..... City and State.....

WOMAN'S AUXILIARY
TO THE CALIFORNIA MEDICAL ASSOCIATION

Progress in Our Mental Health Program

One of the most recent projects undertaken by your Auxiliary has been the setting up of a program on mental health. Launched in 1953, this program has grown apace, until now nearly every county auxiliary has organized mental health activities of its own.

This project was started in recognition of the growing need in our society for an understanding of the factors affecting mental health. Our aim has been to acquaint Auxiliary members with the problems involved, to interest them in these problems, and to foster their participation in local volunteer activities which further mental health.

County auxiliaries have gone about the promotion of mental health by scheduling, at least once a year, a meeting devoted to discussion of the subject. Guest speakers and members participate. This year, our state chairman is stressing the importance of volunteers working with youngsters to help avert mental illness in later life. At the other end of the scale, volunteer work with elderly people is also encouraged, for as life expectancy increases so does the number of unoccupied—and often despondent—older folk.

We believe that our mental health program can be a very valuable one. In sponsoring it, we are once more encouraging our members to tackle a vital community problem related to the field of medicine. We feel that in so doing, we serve not only our communities better, but the medical profession as well.

Our Goal For Today's Health

It was back in 1931 that the A.M.A. first called on all of its auxiliaries to help promote a magazine which would give authentic and accurate information on health and medical problems to the public. Your Auxiliary responded by making the promotion of *Hygeia*—as the magazine was then called—one of its two special projects for that year. And every year since then, the promotion of this magazine, now known as *Today's Health*, has been an important and constantly stressed activity of your Auxiliary.

Several different ways have been worked out to help increase sales of *Today's Health*. Each Auxiliary member is urged to subscribe to it personally, as well as to see to it that her husband's office subscribes. Members help place subscriptions in their dentist's offices, and among their friends. In some counties, auxiliaries work with their local societies in arranging for gift subscriptions to their local schools, Parent-Teacher Associations, hospital reading rooms, etc. One of our campaigns has been to interest registered nurses—for whom a special rate has recently been established—in *Today's Health*.

We find *Today's Health* interesting and informative reading ourselves, and agree that its wide circulation can be an important way of increasing understanding of the fields of health and medicine. Our Auxiliary goal for *Today's Health* has been set at one subscription per member—a big total with our membership well over 6,000. Last year we accounted for nearly 3,000 *new* subscriptions, and this year it looks as though we may double that number.

Aid to Flood Victims

Many physicians' families were hard hit during the recent widespread floods here in California. It is noteworthy that spontaneous offers of help were forthcoming from county auxiliaries and people in the medical profession all over the state. Your state Auxiliary joined in, too. Auxiliary members are still doing what they can as the flood victims get on with the job of salvaging and rebuilding what is left.

NEWS & NOTES

NATIONAL • STATE • COUNTY

ALAMEDA

Dr. Edwin H. Lennette, chief of the State of California Viral and Rickettsial Disease Laboratory, Berkeley, has been appointed one of six members of the recently formed Commission on Rickettsial Diseases of the Armed Forces Epidemiologic Board, Washington, D. C. The new commission was organized to meet the need for increasing research in rickettsial diseases and to train personnel in this field.

LOS ANGELES

The College of Medical Evangelists **Alumni Postgraduate Convention,** five days of scientific lectures and refresher courses primarily to fit the needs of general practitioners, will be held March 4-8 in Los Angeles.

Refresher courses will be given March 4 and 5 at White Memorial Hospital and the three-day scientific assembly will be held March 6, 7 and 8 at the Biltmore Hotel.

The American Academy of General Practice grants its members formal postgraduate credit for registered attendance at the refresher course program and informal postgraduate credit for registered attendance in the Scientific Assembly.

* * *

University of California Extension and the U.C.L.A. Medical School will conduct a **civil defense program for physicians,** starting February 15, according to Dr. Thomas H. Sternberg, assistant dean for postgraduate medical education. Sessions are set for Wednesdays from 7 to 10 p.m. through March 28.

"It is of great importance that all physicians learn as much as possible about civil defense, Dr. Sternberg said. "The most important aspects of medical defense for the practicing physician will be presented in this civil defense course." The course will carry 18 hours of Academy of General Practice credit.

* * *

Officers of the **Metropolitan Dermatological Society** of Los Angeles elected for 1956 are as follows: President, Dr. Harold Price, North Hollywood; vice-president, Dr. Edward L. Murphy, Burbank, and secretary-treasurer, Dr. Laurence J. Underwood, Glendale.

* * *

The winner of the annual contest of the **Los Angeles County Physicians' Aid Association** which was held at the time of the Los Angeles Midwinter Medical Convention in January, was Dr. Alvin L. Chaffin of Kerman, California. As a result, Dr. Chaffin became the owner of a 1956 Cadillac.

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The Los Angeles Radiological Society has announced the **Midwinter Radiological Conference,** February 25 and 26, at the Biltmore Hotel in Los Angeles. Reservations may be made through the conference secretary, Dr. Norval Zimmerman, 3875 Wilshire Boulevard, Los Angeles 5. The fee is $20.00.

SAN DIEGO

The fourth annual meeting of the **California Blood Bank System** will be held February 24 and 25 at the El Cortez Hotel in San Diego. Host for the meeting will be the San Diego Blood Bank. Further information may be obtained by writing to the California Blood Bank System's Central office, 270 Masonic Avenue, San Francisco.

SAN FRANCISCO

A fellowship in cancer chemotherapy is available on the Tumor Chemotherapy Service, Department of Medicine, Stanford University School of Medicine, for the year July 1, 1956, to June 30, 1957, the school announced recently. The fellowship pays a stipend of $300 a month. The appointment is for one year, but may be renewable for an additional year.

The fellowship was described as providing "opportunity for clinical investigation and basic research in the field of tumor chemotherapy, as well as for training in basic and clinical hematology."

Anyone interested should communicate with Dr. Byron E. Hall, Tumor Chemotherapy Service, Department of Medicine, Stanford University School of Medicine, San Francisco.

About 22,500 members of the San Francisco culinary trades will be eligible to join a new **California Physicians' Service** group program as a result of an agreement signed December 16 between C.P.S.-Blue Shield and representatives of the culinary workers unions and employers association, C.P.S. announced.

The agreement will permit union members and their dependents to choose between C.P.S.-Blue Shield and the Kaiser Foundation plan. The latter has been in effect since 1953. Coverage for employees of large hotels and clubs will begin February 1, and April 1 for employees of restaurants and small hotels.

Influential in the decision to change to California Physicians' Service, the announcement said, was the passage by the San Francisco Medical Society in March, 1955, of C.P.S.' $6,000 income ceiling, which assures payment in full for contract services to C.P.S. members whose gross family incomes are less than $6,000 per year.

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The program for the **Northern California Rheumatism Association** meeting, which is to be held Friday, February 17, at Letterman Army Hospital, San Francisco, is as follows:

Morning Session: 9:30 a.m. to noon.

1. Welcoming Address: Major General Paul I. Robinson, M.C., U.S.A.
2. Unusual Sites of Rheumatoid Arthritis: Walter J. Treaner, M.D., and Lt. Col. Raoul Psaki, M.C., U.S.A.
3. Recent Studies in the Effects of the Newer Corticoids on Gastric Secretion: John V. Carbone, M.D., Daniel Liebowitz, M.D., Peter H. Frosham, M.D., and Valda Crevling, B.S.
4. The Hormonal Treatment of Lupus Erythematosus Disseminata: John Elliott, M.D.
5. Ultrasonic Therapy: Malvern Dorinson, M.D.
6. Paper Electrophoresis: Emmett Durrum, M.D.

Afternoon Session: 2:00 - 5:00 p.m.

1. Clinical Pathological Conference.
2. Presentation and Discussion of Cases Involving General and Special Problems in Various Rheumatic Diseases.

* * *

Dr. Harry Eagle, Chief, Experimental Therapeutics, National Microbiological Institute, has accepted an invitation by the Stanford University School of Medicine to deliver the

Doctor Morris Herzstein Course of Medical Lectures in San Francisco, March 12, 14 and 15, 1956. The titles are:

I and II. Specific Growth Requirements, Metabolic Activities, and Nutritional Deficiencies of Normal and Malignant Cells in Tissue Culture.

III. The Nutritional Requirements for the Propagation of Poliomyelitis Virus: and Observations on the Use of Tissue Culture for the Screening of Carcinolytic Agents.

SANTA CLARA

The annual regional meeting of the Southern California Division and the Northern California Chapter of the United States Section of the **International College of Surgeons** will be held at the St. Claire Hotel, San Jose, March 22 and 23, 1956. Members and families of the medical and allied professions are cordially invited to attend. Communications should be addressed to Dr. Carmelo C. Celestre, secretary, Northern California Chapter, 1686 Union Street, San Francisco 23, or to Dr. Ross V. Parks, secretary, Southern California Division, 1930 Wilshire Boulevard, Los Angeles 57.

* * *

Dr. Eugene R. Perez is the new president of the **San Jose Surgical Society,** succeeding Dr. Gabe C. Long. Other officers for the current year are Dr. Glen S. Harman, president-elect; Dr. Ralph S. Purdy, secretary, and Dr. Frederic J. Snyder, treasurer. Councilors for 1956 are Drs. Lester J. Johnson, Clayton E. Brock and Frederick L. Eagleston.

GENERAL

Dr. Edward Lee Russell, health officer of Orange County, was elected president of the **California Conference of Local Health Officers** at the organization's meeting in December. He succeeds Dr. Harold Chope, San Mateo County health officer. Dr. Ellis D. Sox, San Francisco City and County health officer, was elected vice-president, and Dr. Merle Cosand, health officer of San Bernardino County, was elected secretary.

* * *

The place and time of the ninth annual meeting of the **American Association of Blood Banks,** previously scheduled for Cincinnati, November 4-7, 1956, have been changed. The meeting will be held September 3, 4 and 5, 1956, at the Somerset Hotel in Boston, Massachusetts.

Inquiries should be directed to Miss Marjorie Saunders, secretary, 725 Doctors Building, 3707 Gaston Avenue, Dallas, Texas.

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Announcement that applications now are being received for the **Earl D. Osborn Fellowship in Dermal Pathology,** sponsored by the American Academy of Dermatology and Syphilology was made recently by the Academy. The fellowship is to provide annually the opportunity for study and training in dermal pathology to a postgraduate student who has completed satisfactorily at least one year or preferably two years of training in dermatology. The stipend is $4,000 a year, divided into four quarterly payments during the year's fellowship. The period of training will be spent at the Armed Forces Institute of Pathology, Washington, D. C. Dermatologists in training may obtain further information and application blanks from Dr. Hamilton Montgomery, chairman of the Committee on Pathology of the American Academy of Dermatology and Syphilology, 200 First Street Southwest, Rochester, Minnesota. The next available appointment begins July 1, 1957.

POSTGRADUATE EDUCATION NOTICES

THIS BULLETIN of the dates of postgraduate education assemblies and the meetings of various medical organizations in California is supplied by the Committee on Postgraduate Activities of the California Medical Association. In order that they may be listed here, please send communications relating to your future medical or surgical programs to: Mrs. Margaret H. Griffith, Assistant Director, Postgraduate Activities, California Medical Association, 417 South Hill Street, Los Angeles 13.

UNIVERSITY OF CALIFORNIA AT LOS ANGELES

In Los Angeles:

Problems of Sterility. February 23-March 22. Fee: $40.00.

Surgical Anatomy of Abdomen, Thorax. April 24-May 29. Fifteen hours. Fee: $125.00.

Surgery of Trauma. March 29-30.*

Dermatology, 1956. June 22-23.*

Laboratory Technician Symposium. June 23-24.*

In San Diego:

Problems of Sterility. February 22-March 21. Fee: $40.00.

Contact: Thomas H. Sternberg, M.D., Assistant Dean for Postgraduate Medical Education, U.C.L.A., Los Angeles 24. BRadshaw 2-8911, Ext. 202.

UNIVERSITY OF CALIFORNIA, SAN FRANCISCO

Conference on Poliomyelitis, February 23, 24, 25. Fee: $45.00.

Course for General Practitioners, March 5 to 9. Fee: $65.00.

Bedside Cardiology, March 19 to 23. Limited Enrollment. Fee: $100.00.

Clinical Electrocardiography, March 19 to 23. Fee: $50.00.

Ophthalmological Conference on Glaucoma. March 22-23. Twelve hours. Fee: $50.00.

Symposium on Proctology, April 7.*

Office Urology, April 8.*

Plastic Surgery, May 18.*

Peripheral Vascular Surgery, May 19.*

Contact: Seymour M. Farber, M.D., Head, Postgraduate Instruction, Office of Medical Extension, University of California Medical Center, San Francisco 22. MOntrose 4-3600, Ext. 665.

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*Fees to be announced.

UNIVERSITY OF SOUTHERN CALIFORNIA, LOS ANGELES

Surgical Planing. Begins in March. Twelve hours. Fee: $25.00.

Physics of Clinical Applications of Radioactive Isotopes. Twenty-four hours. February 10-June 22. Fee: $50.00.

Anesthesia. Full time for three months. Opening every three months. Fee: $300.00.

Contact: Phil R. Manning M.D., Director of Medical Extension Education, University of Southern California School of Medicine, 2025 Zonal Avenue, Los Angeles 33. CApital 5-1511.

COLLEGE OF MEDICAL EVANGELISTS

Anesthesiology. Daily, full-time, four months, beginning each four months. Fee: $300.

Gynecology, Wednesdays, March 21 to May 23. Ten hours. Fee: $30.00.

Operative Surgery, Wednesdays, March 21 to June 6. Thirty hours: Fee: $200.00.

Thoracic Surgery, Wednesdays, April 18 to May 9. Eight hours. Fee: $30.00.

Diseases and Injuries of Bones and Joints, Daily, July 2 to July 31. Full time. Fee: $100.00.

Contact: Chairman, Section on Graduate and Postgraduate Medicine, College of Medical Evangelists, 1720 Brooklyn Ave., Los Angeles 33. ANgelus 9-9131, Ext. 205.

STANFORD UNIVERSITY

Monday Morning Clinical Conferences, Room 515.

Contact: D. H. Pischel, M.D., Professor, Division of Ophthalmology, Stanford University School of Medicine.

Postgraduate Conference in Otorhinolaryngology, March 26 to 30. Fee: $100.00.

Postgraduate Conference in Ophthalmology, March 19 to 23. Fee: $100.00.

Postgraduate Conference in Practical Pediatric Dermatology. March 23-24. Fee: $50.00.

Contact: Office of the Dean, Stanford University School of Medicine, 2398 Sacramento Street, San Francisco 15. WEst 1-8000.

CALIFORNIA MEDICAL ASSOCIATION POSTGRADUATE INSTITUTES

West Coast Counties in association with College of Medical Evangelists, March 1-2, Golden Bough Theater and La Playa Hotel, Carmel.

North Coast Counties in association with University of California School of Medicine, San Francisco, April 5 and 6, Veterans Memorial Auditorium, Santa Rosa.

San Joaquin Valley Counties in association with the University of California School of Medicine, Los Angeles, May 10 and 11, Hacienda, Fresno.

Sacramento Valley Counties in association with Stanford University School of Medicine, June 20, 21, 22, Cal-Neva Lodge, Lake Tahoe.

Contact: C. A. Broaddus, M.D., Director of Postgraduate Activities, P.O. Box A-1, Carmel, California, or Mrs. Margaret H. Griffith, Assistant Director, Postgraduate Activities, California Medical Association, 417 So. Hill St., Los Angeles 13.

Medical Dates Bulletin

FEBRUARY MEETINGS

Midwinter X-Ray Conference sponsored by Los Angeles Radiology Society, Biltmore Hotel, Los Angeles, February 25 and 26.

Contact: Robert B. Engle, M.D., program chairman, St. Luke's Hospital, Pasadena 8.

University of California Sproul Anniversary Celebration Symposium, "The University and the Medical Sciences." Monday and Tuesday evenings, February 27 and 28, Morrison Auditorium in Golden Gate Park, San Francisco. All physicians cordially invited to attend.

Contact: Seymour M. Farber, M.D., chairman, at Office of Medical Extension, University of California Medical Center, San Francisco 22. MOntrose 4-3600, Ext. 665.

MARCH MEETINGS

Laennec Society scientific and dinner meeting each fourth Friday, 6:30 p.m., Alexander Hamilton Hotel, San Francisco. For all physicians interested in Chest Diseases.

Contact: E. P. Von Allmen, secretary-treasurer.

College of Medical Evangelists Alumni Postgraduate Convention. Refresher courses, March 4 and 5, White Memorial Hospital, Los Angeles. Scientific Assembly, March 6 to 8, Biltmore Hotel, Los Angeles.

Contact: Walter B. Crawford, managing director, College of Medical Evangelists, Loma Linda.

Regional Conference on Physicians and Schools, March 9-10. Convention Hall, Balboa Park, San Diego. Presented by California Medical Association in cooperation with San Bernardino, Orange, Riverside, San Diego and Inyo-Mono County Medical Societies.

Contact: Robert L. Thomas, assistant executive secretary, California Medical Association, 450 Sutter Street, San Francisco.

Cancer Commission, California Medical Association, Cancer Conference for Yolo County Medical Society. March 7, 6:30 p.m., Woodland.†

Cancer Commission, California Medical Association, Cancer Conference for San Diego County Medical Society. March 13, 5:30 p.m., U. S. Naval Hospital, San Diego.†

Cancer Commission, California Medical Association, Cancer Conference for Kern County Medical Society. March 20, 3:00 p.m., Bakersfield.†

Medical Alumni Committee of Children's Hospital, San Francisco, March 17.* Morning: Dermatology. Afternoon: Nutritional problems peculiar to modern pediatrics.

Southwestern Pediatric Society spring meeting, March 20-21, Statler Hotel, Los Angeles.

Contact: Wendell M. Redfern, M.D., 125 East Glenoaks Blvd., Glendale 7, or Harry O. Ryan, M.D., 149 North El Molino, Pasadena 4.

**For registration or information, contact:* Gertrude Jones, M.D., Children's Hospital, San Francisco.

†*Contact:* Walter E. Batchelder, M.D., Medical Director, Cancer Commission, 467 O'Farrell Street, San Francisco.

APRIL MEETINGS

California Tuberculosis and Health Association, California Trudeau Society and California Sanatorium Association Annual Meeting, Sheraton-Palace Hotel, San Francisco, April 5, 6, 7.

Contact: E. L. Daggett, director, Public Relations, California Tuberculosis and Health Association, 130 Hayes Street, San Francisco 2.

Cancer Commission, California Medical Association, Cancer Conference for Fresno County Medical Society. April 10, 7:00 p.m., Sunnyside Country Club, Fresno.†

United States-Mexico Border Public Health Association, 14th annual meeting, Calexico (California) and Mexicali (Baja California), April 13 to 16.

Contact: Sidney B. Clark, M.D., secretary, 204 U. S. Court House, El Paso, Texas, or Donald G. Davy, M.D., assistant chief, Division of Local Health Service, 2151 Berkeley Way, Berkeley 4.

Medical Alumni Committee of Children's Hospital, San Francisco, April 14.* Behavior Problems and Childhood Psychiatry.

American College of Physicians 37th Annual Session, Los Angeles, April 16-20.

Contact: George C. Griffith, M.D., General Chairman, Box 25, 1200 N. State St., Los Angeles 33.

Cancer Commission, California Medical Association Cancer Conference for San Luis Obispo County Medical Society, April 21, 6:30 p.m. Dinner, San Luis Obispo.†

Valley Children's Hospital Annual Spring Clinics, April 27 and 28, 9 a.m., Roosevelt High School Auditorium, Fresno.

Western Industrial Medical Association annual meeting, all day, April 28, Ambassador Hotel, Los Angeles.

Contact: Edward Zaik, M.D., secretary, 740 South Olive Street, Los Angeles 14.

Hawaii Medical Association Centennial Celebration. Scientific sessions, historical pageant of 100 years of medicine in Hawaii, social festivities, etc., Honolulu, April 22 to 29.

Contact: Hawaii Medical Association, 510 S. Beretania Street, Honolulu 13, Hawaii.

California Medical Association Annual Meeting, celebrating 100th Anniversary, Ambassador Hotel, Los Angeles, April 29 to May 2.

Contact: John Hunton, Executive Secretary, 450 Sutter St., San Francisco 8, or Ed Clancy, Director of Public Relations, 417 S. Hill St., Los Angeles 13.

MAY MEETINGS

New Mexico Medical Society annual session, Roswell, New Mexico, May 2 to 4.

Contact: Ralph R. Marshall, executive secretary, 223-24 First National Bank, Albuquerque, N. M.

California Heart Association Annual Meeting and Scientific Session, La Playa Hotel, Carmel, May 18 to 20.

Contact: Alan Croft Blanchard, field director, California Heart Association, 1428 Bush Street, San Francisco 9.

Western Branch, American Public Health Association Annual Meeting, Salt Lake City, Utah, May 30 to June 2.

Contact: Mrs. L. Amy Darter, secretary-treasurer, at State Public Health, 2151 Berkeley Way, Berkeley 4, California.

SUMMER AND FALL MEETINGS

Idaho State Medical Association annual meeting, June 17-20, Sun Valley, Idaho.

Contact: Armand L. Bird, executive secretary, Idaho State Medical Association, 364 Sonna Building, Boise, Idaho.

Colorado Division of the American Cancer Society 10th annual Rocky Mountain Cancer Conference, Shirley-Savoy Hotel, Denver, Colorado, July 11 and 12.

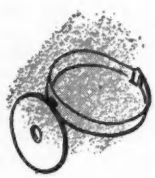
Contact: John S. Bouslog, M.D., 835 Republic Building, Denver 2, Colorado.

San Diego County General Hospital Tenth Annual Postgraduate Assembly. September 19-20.

Contact: Howard B. Kirtland, Sr., M.D., Chairman, Postgraduate Committee, 3505 Fourth Avenue, San Diego 3.

California Society of Internal Medicine Annual Meeting. September 29, La Playa Hotel, Carmel.

Contact: Mrs. Mildred B. Coleman, Assistant Secretary, Room 515, 384 Post Street, San Francisco 8.



THE PHYSICIAN'S *Bookshelf*

CANCER CELLS—E. V. Cowdry, Director, Wernse Cancer Research Laboratory, Washington University, St. Louis, formerly President, American Association for Cancer Research. W. B. Saunders Company, Philadelphia, 1955. 677 pages, 137 figures, $16.00.

Dr. Cowdry is a nonmedical scientist who has been a prominent figure in cancer research for many years. Originally an anatomist, his interests subsequently turned to microanatomy (Textbook of Histology), intracellular morphologic and chemical differences between normal and cancer cells, geriatrics (Problems of Aging), and organizational contributions to the International Union against Cancer and the American Association for Cancer Research, in both of which he has held the highest office.

With this sort of background, it is not surprising that "Cancer Cells" offers admirable discussion of such subjects as the cytoplasm of normal and "malignant" cells, nuclear differences, mutations and the controversy over viruses as cancer agents. There is also valuable reference material on heredity, geographic frequency and physical and chemical carcinogens.

For physicians this book would seem to have little appeal and even less of real value. To quote from the author's preface: "In many chapters I am open to criticism for straying from an account strictly limited to cancer cells . . . This book is moreover uneven chiefly because my training is uneven and especially inadequate in clinical medicine, physics and chemistry." The validity of this self criticism is apparent in the annoyingly discursive fashion employed in any approach to the natural history of cancer, while the sections dealing with such clinical subjects as prevention, diagnosis and treatment contain abundant evidence that both the philosophy and practice of medicine is the province of doctors of medicine, rather than of distinguished nonclinical scientists.

It is surprising to find in these pages an adherence to the evangelistic propaganda of a decade or more ago. In the section on treatment, it is said that "each of the over 200,000 persons dying annually is an emergency." This reviewer also thinks it is naive to suggest that "the greatest step in the prevention of cancer would be removal of the psychological block against consulting physicians."

A chapter entitled (rather ungrammatically) "Single Trauma Cancers" bestows unmerited recognition on minor traumata as causative factors. Forty-two instances of squamous or basal cell carcinoma, all but one of the lip, face or dorsum of hand, ages from 40 to 87, are listed, and all alleged various cuts, burns or blows at intervals of 5 weeks to 14 years prior to diagnosis! These case reports are from the Barnard Free Skin and Cancer Hospital; one wonders what percentage of the total lip and cutaneous cancers these 42 constitute, and what percentage of a similar, control sample of the population in St. Louis would have suffered comparable trauma. Further violence to reason is committed by closing the chapter with quotations from judicial opinions; some years ago Dr. Fred Stewart remarked that if trauma caused cancer, expert medical witnesses should develop gliomas!

The format, printing and binding are handsomely done. There is an extensive, well chosen bibliography relating to basic cancer research.

* * *

HANDBOOK OF PEDIATRICS. Henry K. Silver, M.D., Associate Professor of Pediatrics, Yale University School of Medicine; C. Henry Kempe, M.D., Assistant Professor of Pediatrics, U. C. School of Medicine, and Henry B. Bruyn, M.D., Assistant Professor of Pediatrics and Medicine, U. C. School of Medicine and Assistant Clinical Professor of Pediatrics, Stanford University Medical School. Lange Medical Publications, Los Altos, 1955. 548 pages, $3.00.

This handbook is intended to supplement rather than replace the standard pediatric texts. As such, it does an excellent job. It should prove useful to the medical student, general practitioner and pediatrician. In condensed and semi-outline form, it contains up-to-date essentials for the diagnosis and management of most pediatric situations encountered in the home, the office or the hospital. Immunological tests, normal growth and developmental data, mental health principles, laboratory tests and treatment procedures are well represented.

The book is small and compact enough to fit into a doctor's bag. The information it contains would appear to warrant a place there in the case of physicians caring for children.

* * *

SHOULD THE PATIENT KNOW THE TRUTH?—A Response of Physicians, Nurses, Clergymen and Lawyers—Edited by Samuel Standard, M.D., and Helmuth Nathan, M.D., Springer Publishing Company, Inc., 44 East 23rd Street, New York 10, N. Y., 1955. 160 pages, $3.00 hard cover, and $2.00 soft cover.

No one should expect to find in this book a definite, positive answer to the question "Should the Patient Know the Truth?" Almost every conceivable part of this question has been discussed from some viewpoint. What is truth? How much of it can or should be told? What the patient deserves and expects are all given answers of one kind or another.

The difficult role of the nurse or those who attend the patient during the time he is ill and away from his doctor is well presented by several thoughtful and penetrating chapters written by qualified nurses.

The religious aspects of this problem are adequately delineated by a priest, rabbi and protestant minister.

While the patient's viewpoint is expressed by a physician patient the book would be more complete if several non-professional patients had been invited to write chapters. In striving for completeness there is much repetition.

Several quotations from literature summarize the general tone throughout most of the book.

"The idea that the truth, the whole truth and nothing but the truth can be conveyed to the patient is an example of

false fabrication, or that fallacy called by Whitehead "the fallacy of misplaced concreteness." Another fallacy is involved, "the belief that it is not too difficult to know the truth."

Another precept which has always guided the best physicians, "So far as possible do no harm." "You can do harm by the process that is quaintly called telling the truth. You can do harm by lying." "The doctor is never privileged to lie to the patient, but he is privileged to tell the patient part of the truth."

Even though this series of essays and opinions does not give a final answer to the question, it does give much help in telling how much or how little of the truth should be told. The most valuable parts of the book are those written by nurses, religious leaders and psychiatrists. They seem to point the way toward a more cooperative effort on the part of all concerned.

* * *

THE YEAR BOOK OF OBSTETRICS AND GYNECOLOGY—1955-1956. J. P. Greenhill, M.D., Editor, Professor of Gynecology, Cook County Graduate School of Medicine, The Year Book Publishers, Inc., 200 East Illinois Street, Chicago, 1955. 544 pages, $6.00.

This book is the annual compendium of selected abstracts in obstetrics and gynecology issued by the publisher. It covers primarily the important contributions in the American and British literature for the months indicated, together with comments on the subject by the editor. One criticism that may be fairly leveled at this and prior volumes is that the editor really offers no critical evaluation of the various articles and no true critique of the studies presented. Thus, the book becomes merely a repository of abstracts, and a reviewer may rightly wonder for what purpose the editorial comments exist other than to give one man's viewpoint upon the subjects under discussion. However, as a reference handbook for some of the publications upon a given problem, the book serves its purpose well. It may be recommended to the busy general practitioner and specialist interested in current contributions in this field.

* * *

STEREOSCOPIC ATLAS OF HUMAN ANATOMY—David L. Bassett, M.D., Associate Professor of Anatomy, Stanford University School of Medicine. Published by Sawyers, Inc., Portland, Oregon.

Section I — Central Nervous System — 238 stereoscopic views in true color, mounted on 34 View-Master reels with 4 compact volumes of more than 400 pages of descriptive text and diagrams. Published in 1952, $27.50.

Section II—Head and Neck—350 full color, three-dimensional views of the head and neck on 50 View-Master reels, with 5 compact volumes of more than 700 pages of descriptive text and diagrams. Published in 1954, $38.50.

After more than ten years of work the first two sections of David L. Bassett's "Stereoscopic Atlas of Anatomy" are now available. It can be highly recommended to students, teachers and practitioners as a superb pictorial survey of human anatomy. It is beautifully done in three dimensional colored photographs and one achieves by inspecting the stereoscopic plates a pleasing review of anatomy.

For students who are in the process of learning anatomy, this would be an ideal way in which to review and consolidate the material in their minds. For the practicing surgeon and physician it gives him essentially the information he wants anatomically without the necessity of doing any large amount of reading. One can review a single dissection, a series of steps in a carefully planned sequence of dissections or an entire area in full perspective and in natural colors comparable to those in real life. A fully labeled sketch based upon a tracing of the original photograph accompanies each plate and furnishes a topographic guide for each view. The views themselves are clear and unmarred, exceptionally fine photographic reproduction exists in every plate. The set is compact and the reviews are readily accessible. Regrouping of the views can be accomplished with ease and one can study any part of anatomy he desires that is included in the two sections so far published.

There is a pertinent text to accompany the reels but the labeling of the illustrations is very clear and only the pertinent information is given.

This is a new and magnificent way to present anatomy to both student and physician, alike. The only possible objection to this work would be its cost, but considering the excellence of the material and the amount of material presented, one can hardly object to that at the present time.

We will look forward to subsequent sections of this book to round out a beautiful, complete stereoscopic atlas of human anatomy.

* * *

PROGRESS IN NEUROLOGY AND PSYCHIATRY—An Annual Review—Volume X, 1955. Edited by E. A. Spiegel, M.D., Professor and Head of the Department of Experimental Neurology, Temple University School of Medicine, Philadelphia. Grune and Stratton, New York, 1955. 645 pages, $10.00.

This annually useful volume has about the same distribution of space devoted to Neurology, Neurosurgery, and Psychiatry as in the past. The coverage is complete; as a matter of fact it is a continuing matter of amazement that so much work is done in these fields each year and so little progress is made in the therapeutic sense. It is almost more than the specialist can do to keep abreast of the work, let alone the general practitioner. This book is directed at the specialist, but the style of most of the contributions is such that it is understandable by any physician. As a reference work on recent advances in the field it is a useful contribution.

* * *

CARDIAC DIAGNOSIS—A Physiologic Approach—Robert F. Rushmer, M.D., Associate Professor of Physiology and Biophysics, University of Washington Medical School. W. B. Saunders Company, Philadelphia, 1955. 447 pages, $11.00.

This is an excellent book written by a competent investigator who is well known for his studies on fundamental problems of cardiac physiology. The book contains many unusual and valuable features. Although its title is "Cardiac Diagnosis," the book is chiefly concerned with the application of recent advances in cardiovascular physiology to our understanding of clinical heart disease.

The writing is clear, concise and simple. The illustrations, designed by the author, are superb. By studying the illustrations alone, much of the subject matter is clearly brought out, even when dealing with complex topics. The best portions of the book are the chapters on function and regulation of the cardiovascular system. The etiology of congestive failure is especially well presented. The author rightfully hopes for an early end to the controversy between the proponents of the "backward failure" theory and the "forward failure" theory since both contain many elements of truth and neither can fully explain heart failure.

A few minor criticisms may be made. For example, quotations are not always absolutely accurate. In discussing myocardial infarction, the author describes a zone of ischemia, a zone of injury and a zone of infarction all three occurring simultaneously. Although most writers have in the past discussed myocardial infarcts in these terms, the fact is that such three zones rarely, if ever, occur simultaneously in the same subject, either in man or in the experimental animal. The author also seems to persist in the old idea that the

endocardial myocardium remains intact after myocardial infarction. While this kind of pathological picture helps to explain classic electrocardiographic theory, it is actually very rarely observed by pathologists.

If any serious criticism can be offered, it is that the book is certainly not primarily a text of Cardiac Diagnosis. But as a work on cardiovascular physiology it is probably unsurpassed. It shows the results of profound and prolonged thinking by a thoroughly competent and skilled investigator. It can be read profitably and with pleasure by anyone interested in basic problems of cardiovascular disease. Hence it is recommended to all cardiologists, internists, physiologists and pharmacologists as a modern and authoritative text.

* * *

COUNSELING IN MEDICAL GENETICS — Sheldon C. Reed, Director of Dight Institute for Human Genetics, The University of Minnesota. W. B. Saunders Company, Philadelphia, 1955. 268 pages, $4.00.

As marriage and family advisors, physicians are frequently consulted about genetic problems, especially those concerning the chances that a given mating will or will not result in abnormal offspring. Obstetricians, pediatricians and general practitioners are particularly apt to be asked for such advice either in advance of marriage or, more often, after a child has been born with organic defects. So important has this aspect of medical practice become that clinics for genetic counseling are being set up in increasing numbers. It is from one of these, the Dight Institute for Human Genetics, that the present slender volume originates, written by its Director, Dr. Reed.

After discussing the functions of counseling service, and briefly reviewing "a few laws" of heredity the author outlines the twenty commonest problems in separate chapters with emphasis on the statistics of each condition including the incidence in fraternal and identical twins when available, on dominance or recessiveness and the resulting probability of its occurrence or recurrence, closing with one or more illustrative case histories and the advice given. There are also provocative chapters entitled "The Ubiquitous Heterozygote" and "Don't Marry a Relative!"

Among the subjects discussed are: Mongolism; nervous system disorders; clubfoot; harelip and cleft palate; mental retardation; pyloric stenosis; fibrocystic disease of the pancreas; blood genetics; disputed paternity; skin color; convulsive seizures; allergies; schizophrenia; manic-depressive psychosis.

The book is admittedly illustrative and eclectic, and is neither profound nor exhaustive, designed to show the general methods of approach and solution of practical problems for which advice is sought, rather than to cover all of them. Unless this is understood, certain omissions are decidedly surprising. For instance, the chapter on Blood Genetics confines itself to Rh and ABO disorders and fails to mention other important ones such as hemophilia, spherocytosis, thalassemia and sicklemia.

Practitioners whose advice is likely to be asked about hereditary problems of heredity will find this a handy and useful book. There is a bibliography which will enable him to look farther if he needs to do so, and a good index.

APPLICATION FOR HOUSING ACCOMMODATIONS

FOR YOUR CONVENIENCE in making hotel reservations for the coming meeting of the **California Medical Association,** April 29–May 2, 1956, Los Angeles, hotels and their rates are at the right. Use the form at the bottom of this page, indicating your first and second choice. Because of the limited number of single rooms available, you will stand a much better chance of securing accommodations of your choice if your request calls for rooms to be occupied by two or more persons. **All requests for reservations must give definite date and hour of arrival as well as definite date and approximate hour of departure; also names and addresses of all occupants of hotel rooms must be included.**

ALL RESERVATIONS MUST BE RECEIVED BEFORE: APRIL 1, 1956

Eighty-fifth Annual Session
CALIFORNIA MEDICAL ASSOCIATION
Los Angeles, California
APRIL 29—MAY 2, 1956

HOTEL ROOM RATES *

	Single	Double	Twin Beds	Suites
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***The above quoted rates are existing rates but are subject to any change which may be made in the future.**

CALIFORNIA MEDICAL ASSOCIATION
450 Sutter Street—Room 2000
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Please reserve the following accommodations for the 85th Annual Session of the California Medical Association, in Los Angeles, April 29-May 2, 1956.

Single Room $..... Double Bedded Room $..... Twin Bedded Room $.....

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ARRIVING AT HOTEL (date).....Hour:.....A.M.....P.M. } Hotel reservations will be held until
Leaving (date).....Hour:.....A.M.....P.M. } 6:00 P.M., unless otherwise notified

THE NAME OF EACH HOTEL GUEST MUST BE LISTED. Therefore, please include the names of both persons for each double room or twin bedded room requested. Names and addresses of all persons for whom you are requesting reservations and who will occupy the rooms asked for:

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